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DRAFT ENVIRONMENTAL IMPACT STATEMENT

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DEPARTMENT OF THE INTERIOR

DRAFT
ENVIRONMENTAL IMPACT STATEMENT
PARKER MOUNTAIN
GRAZING MANAGEMENT

Prepared by

BUREAU OF LAND MANAGEMENT
DEPARTMENT OF THE INTERIOR

Paul L Howard

Utah State Director, Bureau of Land Management

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SUMMARY

(X) Draft ( ) Final Environmental Statement

Department of the Interior, Bureau of Land Management

1. Type of Action (X) Administrative ( ) Legislative

2. Brief Description of Action: The Parker Mountain Planning Unit encompasses 213,057 acres of public land in Wayne County, Utah.

The proposed action is to initially allocate the following animal unit months (AUMs) of forage: 11,180 for livestock; 1,927 for deer; 406 for elk; and 617 for antelope. In 15 to 20 years, the proposed allocation of AUMs would be: 11,556 livestock, 2,312 for deer, 406 for elk, and 612 for antelope.

The proposed action would 1) reserve two allotments for big game use; 2) continue existing grazing on 15 allotments; 3) combine five allotments and implement rest seasonal grazing; 4) reduce grazing use by approximately 56 percent (1,431 AUMs) on 20 allotments, 5) change season of use on one allotment.

Developments proposed include: 16 miles of water pipeline with nine water troughs; construction of four new reservoirs and modification of 30 existing reservoirs; 15 miles of fence with one cattle guard; chaining and seeding of 4,800 acres of pinyon-juniper and big sagebrush; and construction of three study exclosures.

3. Summary of Environmental Impacts: Vegetation ground cover, key species, composition, and condition is expected to improve on 87,000 acres, but may decline on 127,000 acres. Forage production would increase from 15,939 AUMs to 16,720 AUMs. Forage would be provided for 827 more deer than the current 1,103 animals. Elk and antelope numbers would not change. Livestock grazing allocations would be reduced from 12,997 animal unit months (AUMs) to 11,180 AUMs (14 percent reduction) actual grazing use would be increase from 8,285 to 11,180 AUMs (35 percent increase). Fifty-six of the 99 livestock operators would be affected by the reductions.

4. Alternatives Considered Are: 1) continuation of present grazing management and level of allocation; 2) maximum constraints on livestock grazing; 3) continue existing management with a 50 percent reduction from the proposed livestock allocation; and 4) elimination of livestock grazing.

5. Comments Have Been Requested From the Following: (See Attachment).

6. Date Draft Statement Made Available to EPA and the Public:

ATTACHMENT

Comments on the Draft Environmental Statement have been requested from the following agencies, interest groups, and individuals. A Public Hearing will be held.

1. Federal Agencies

- Department of Agriculture
    - Agricultural Stabilization and Conservation Service
    - Forest Service
    - Soil Conservation Service
- Department of the Interior
    - Geological Survey
    - Fish and Wildlife Service
    - Bureau of Indian Affairs
    - Bureau of Mines
    - Bureau of Reclamation
    - Heritage Conservation and Recreation Service
    - National Park Service
        - Capitol Reef National Park
    - Office of the Solicitor
- Department of Commerce
- Advisory Council on Historic Preservation
- Environmental Protection Agency

2. State Agencies and Entities

- State of Utah
    - Clearing House (A-95)
    - Department of Agriculture
    - Department of Natural Resources
    - Division of Lands
    - Division of Wildlife Resources
- University of Utah
- Utah State University

3. Local Agencies

- Six County Commissioners Organization
- Wayne County Commission

4. Non-government Organizations

- Ada County Fish and Game League
- Audubon Society
- Brigham Young University
- Common Cause
- Council on Utah Resources
- Defenders of the Outdoor Heritage
- Defenders of Wildlife
- Enchanted Wilderness Association
- Environmental Action
- Environmental Awareness

Environmental Defense Fund
Friends of the Earth
Good Earth
Izaak Walton
League League of Women Voters
National Council of Public Land Users
National Parks and Recreation Association
National Stock Grower's Association
National Wildlife Federation
Natural Resources Defense Council
Nature Conservancy
Nevada Outdoor Recreation
Association Oregon Environmental Council
Pacific Legal Foundation
Pro-Utah, Inc.
Public Lands Council
Rocky Mountain Center on Environment
Rocky Mountain Sportsmen Association
Save Our Canyons Committee
Sierra Club
Society for Range Management
The Wilderness Society
The Wildlife Society
Utah Cattlemen's Association
Utah Council, Trout Unlimited
Utah Environment Center
Utah Farm Bureau
Utah Nature Study Society
Utah Sportsmen Association
Utah Archaeological Society
Utah Wildlife and Outdoor Recreation Federation
Utah Wool Grower's Association
Women's Conservation Council of Utah

5. Congressional

Utah Delegation

6. Interested Individuals

Copies of this draft environmental statement will be available for public inspection at the Bureau of Land Management Offices listed below:

Washington Office of Public Affairs
18th and C Street, N.W.
Washington, D.C. 20240
Phone: (202) 343-4151

Utah State Office
University Club Building
136 East South Temple
Salt Lake City, Utah 84111
Phone: (801) 524-4257

Richfield District Office
150 East 900 North
Richfield, Utah 84701
Phone: (801) 896-8221

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CHAPTER 1

DESCRIPTION OF THE PROPOSAL

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CHAPTER 1
DESCRIPTION OF THE PROPOSAL

I. INTRODUCTION

This environmental impact statement (EIS) analyzes the proposed grazing management for 39 allotments in the Parker Mountain Planning Unit. Figure 1-1 shows the location of the planning unit; Figure 1-2 shows the land ownership pattern in the planning unit. Land ownership and total acreages within the planning unit's boundary are: 1) public land administered by BLM, 213,587; 2) State of Utah, 35,523; 3) private, 40,437; and 4) total, 289,547.

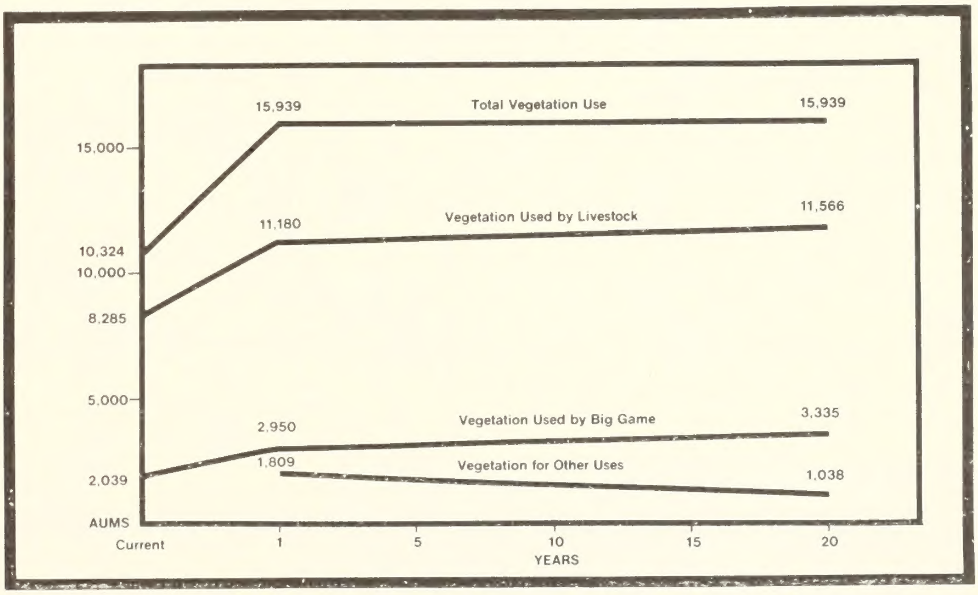
Five hundred and thirty acres of public land are small scattered tracts (outside of grazing allotments) on which no grazing by livestock is authorized; no grazing permits are proposed; and wildlife use is minimal. This acreage is not analyzed in this EIS.

The proposal includes only grazing management on public lands in the planning unit, but its implementation would affect livestock grazing on state and private lands. A discussion of this relationship can be found under the heading "Interrelationships," near the end of this chapter.

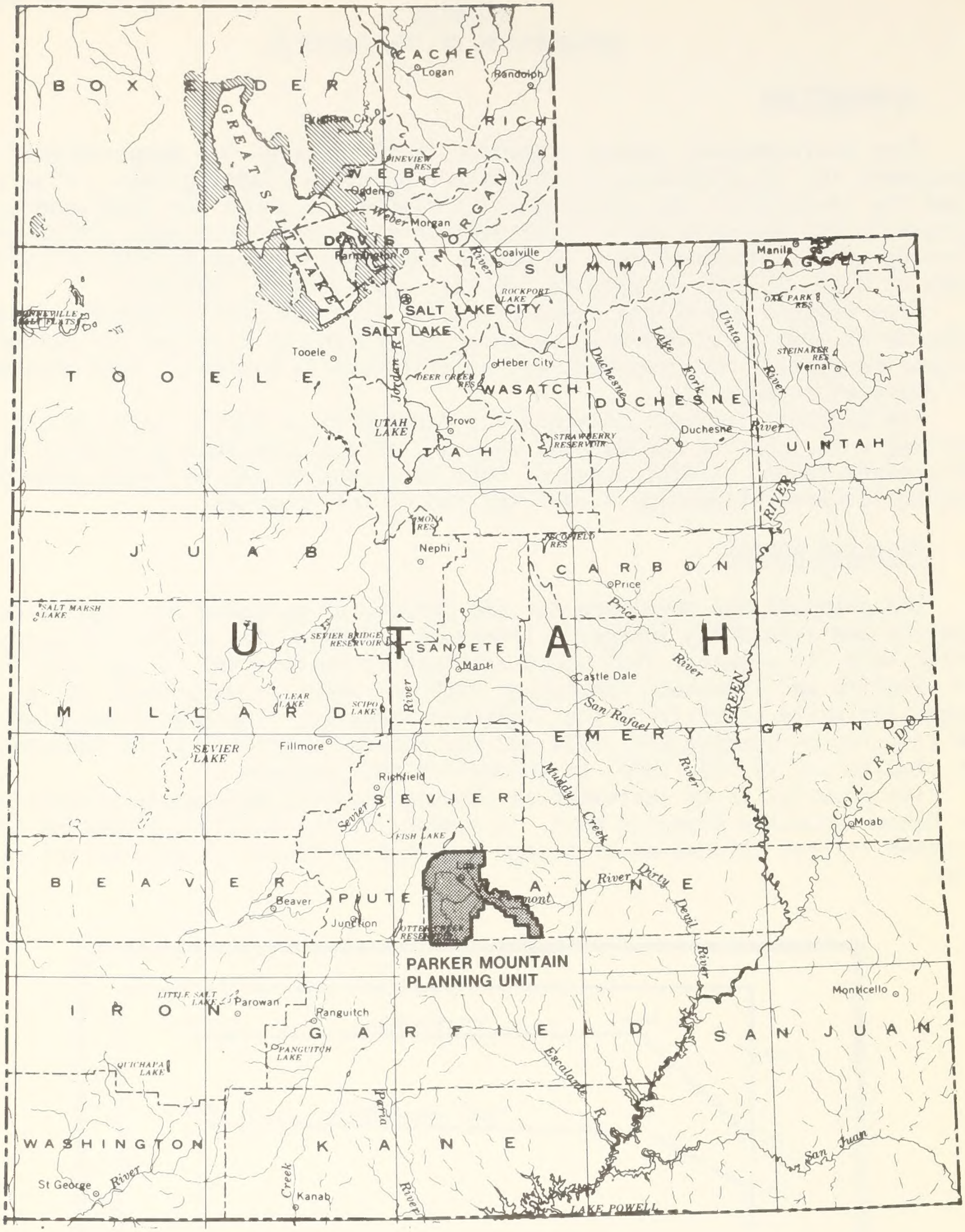
II. PROPOSED ACTION

The proposal was developed for the purpose of managing the vegetation resource and allocating forage to livestock and wildlife, on 213,057 acres of public land, in a manner that would maintain or improve the forage condition for wildlife and livestock consistent with the needs of watershed, soils, and vegetation while stabilizing the livestock industry. The BLM is mandated by law (the Taylor Grazing Act, 1934 and the Federal Land Policy and Management Act, Public Law 94-579, 1976) to accomplish this purpose.

The proposal is to implement an improved grazing management program on the Parker Mountain Planning Unit. A summary of the existing situation and proposed initial allocation of forage is shown on Table 1-1 and the following graph.



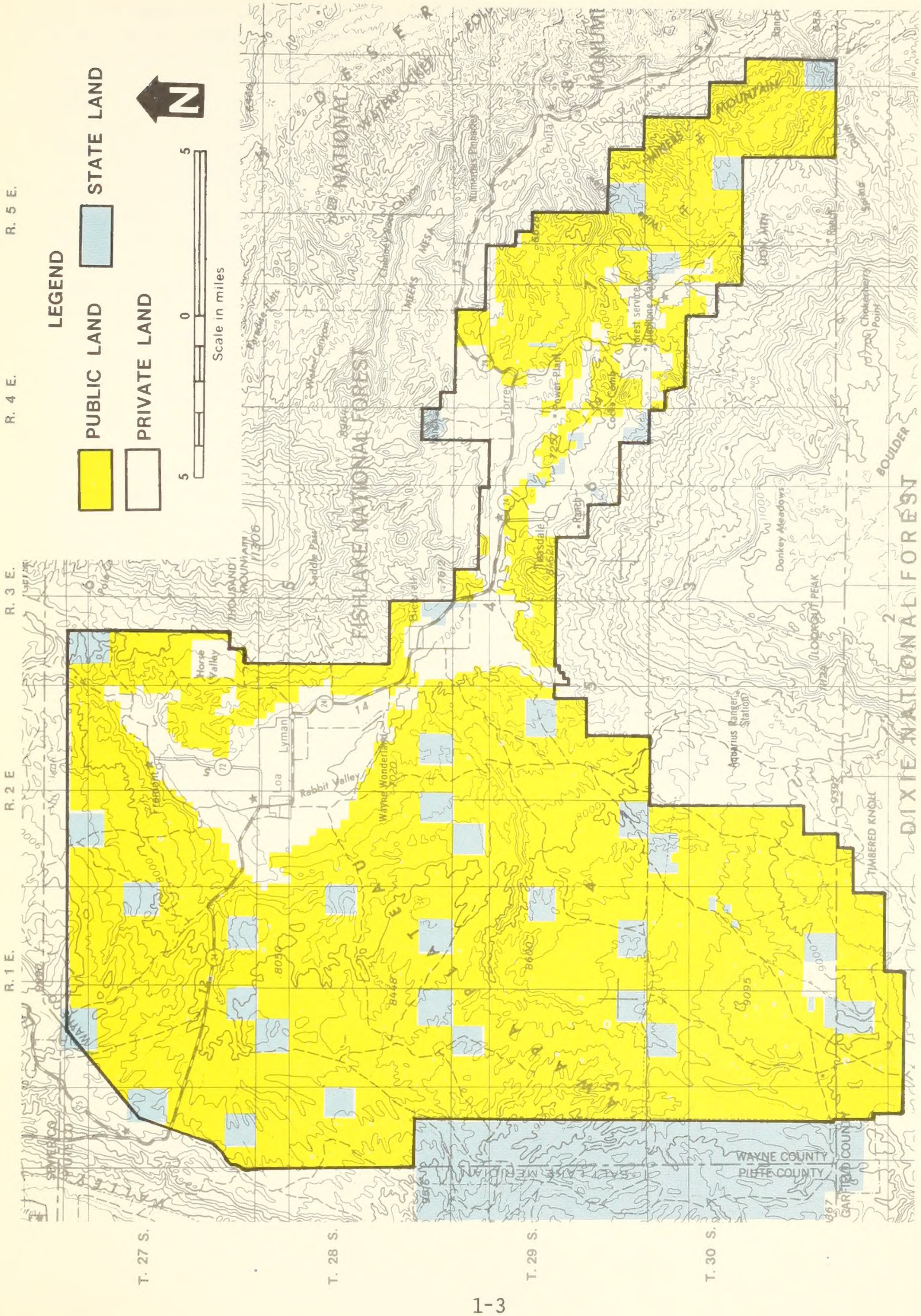
EXISTING AND PROPOSED VEGETATION USE



PARKER MOUNTAIN PLANNING UNIT LOCATION

FIGURE 1-1

DUMMY FIGURE 1-2



LAND STATUS

FIGURE 1-2

TABLE 1-1

Summary of Existing and Initial Proposed Forage Allocation
(Parker Mountain Planning Unit)

Basic Information				Existing Forage Allocation									Proposed Initial Forage Allocation										
								Current Use (AUMs)						Livestock			Wildlife						
	Land Status (Acres)					Current Allocation (AUMs)[b]			Wildlife						Percent of Current		AUMs				Percent of Current		
Proposed Action Component	Public	State	Private	Number of Allotments	Forage Production[a]	Livestock	Wildlife	Livestock[c]	Antelope	Deer	Elk	Total	Number of Allotments	AUMs	Allocation	Use	Antelope	Deer	Elk	Total	Allocation	Use	Proposed Action Component
NO LIVESTOCK GRAZING	475	0	0	2	10	0	0	0	0	9	0	9	2	0	--	--	0	10	0	10	--	111	NO LIVESTOCK GRAZING
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	126,314	11,996	639	15	12,349	8,939	3,057	5,953	460	413	353	1,115	15	8,939	100	150	460	853	353	1,666[d]	51	139	CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING Spring, Fall, Winter)
IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring)	21,159	1,274	0	5	660	816	0	456	8	104	53	165	1	430[e]	53	94	8	104	53	165	--	100	IMPLEMENT TWO PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring)
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter)	54,294	5,285	1,654	11	2,343	2,772	172	1,558	149	422	0	571	11	1,426	51	92	149	768	0	917	533	161	CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter)
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Winter)	10,543	80	160	9	565	466	99	314	0	171	0	171	9	381	82	121	0	184	0	184	186	109	CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Winter)
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter)	272	0	0	1	12	4	0[f]	4	0	8	0	8	1	4	100	100	0	8	0	8	--	100	CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter)
TOTAL	213,057	18,635	2,453	43	15,939	12,997	3,328	8,285	617	1,127	406	2,039	39	11,180	86	135	617	1,927	406	2,950	85	139	TOTAL

Source: Appendix I-1.

Notes: [a] As per ocular reconnaisance forage surveys.

[b] Animal unit month is used to describe amounts of grazing. It is the amount of forage consumed by one cow during the course of one month. One AUM is also approximately equal to the forage consumed during one month, by 1 horse, 1.9 elk, 5 sheep, 5.8 deer, or 9.6 antelope (BLM, 1977).

[c] Based on an average of the authorized active (licensed) use for 1975-77.

[d] 1,744 AUMs reserved for watershed, aesthetics, and threatened and endangered species (see Appendix I-7).

[e] Use would be reduced to 215 AUMs the first year of implementation (see Table 1-5 for details).

[f] Though no reservations were made, it is assumed, based on current forage condition and trend, that forage is available for the AUMs of wildlife use listed in the current wildlife use column.

A detailed listing of the existing situation and proposed forage allocation can be found in Appendix I-1. A temporary reduction in livestock forage allocation from 12,997 AUMs to 11,180 AUMs in the short term and a long-term reduction to 11,566 AUMs is proposed. Operators are presently using 4,712 AUMs less than their current allocation; therefore, full utilization at the proposed allocation level would result in an increase in actual use from 8,285 AUMs to 11,566 AUMs in the long term.

Grazing management on the 39 allotments, shown on Figure 1-2 involved in this proposal, would be divided into six separate components which have similar management objectives, problems, and opportunities for grazing treatments. These six components are summarized on Table 1-2, and their location shown on Figure 1-3. Both cattle and sheep graze the same areas on the planning unit (see Appendix I-1). In four instances, several smaller sheep allotments are combined as one cattle allotment, under a distinct and different name when they are grazed by cattle. When grazed by sheep, the smaller allotments are operated individually. An example is the Bicknell Spring Allotment which is grazed by cattle, but is divided into the Cedar Peak, Hare Lake, and Smooth Knoll allotments when grazed by sheep.

An ocular reconnaissance forage survey on the entire planning unit was completed in 1956-1957. This survey showed a total of 16,325 AUMs of available forage. Of this, 12,997 AUMs were allocated for livestock grazing and 3,328 AUMs reserved for wildlife. Forage surveys on nine allotments (59,356 acres or 28 percent of public lands in the planning unit) were conducted in 1975-1976 to validate and update the 1956-1957 surveys. The forage surveys conducted in 1975-1976 showed that there are 15,939 AUMs of available forage, and a reduction of use on 11 allotments is necessary. A brief discussion of the methodology for conducting the ocular reconnaisance forage survey is given in Appendix I-2.

Eleven of the 39 livestock grazing allotments in the proposal are currently being managed under Allotment Management Plans (AMPs) (see Appendix I-1). Continuous-seasonal grazing management specified by the existing AMPs would continue on 10 of the 11 allotments. The AMP for the Seven Mile Allotment would be revised to reflect a change from continuous-seasonal grazing to rest-seasonal grazing. Twenty-eight new AMPs would be prepared for the remaining allotments.

A. MULTIPLE USE OBJECTIVES

1. General Overall Objectives

One objective of the proposal is to provide 11,566 AUMs for livestock use (89 percent of current allocation) in approximately 15 to 20 years. During this same period, another objective is to provide 3,335 AUMs for wildlife use (100 percent of current allocation). Objectives involving long-term (15-20 years) wildlife allocations were formulated from Utah Division of Wildlife Resources (UDWR) recommendations where sufficient forage would be available. Where sufficient forage would not be potentially available, the proposed allocation is less.

Nine multiple-use objectives from the management framework plan (MFP) were used to develop the individual recommendations upon which the proposal is based. The multiple use objectives are listed on Table 1-3.

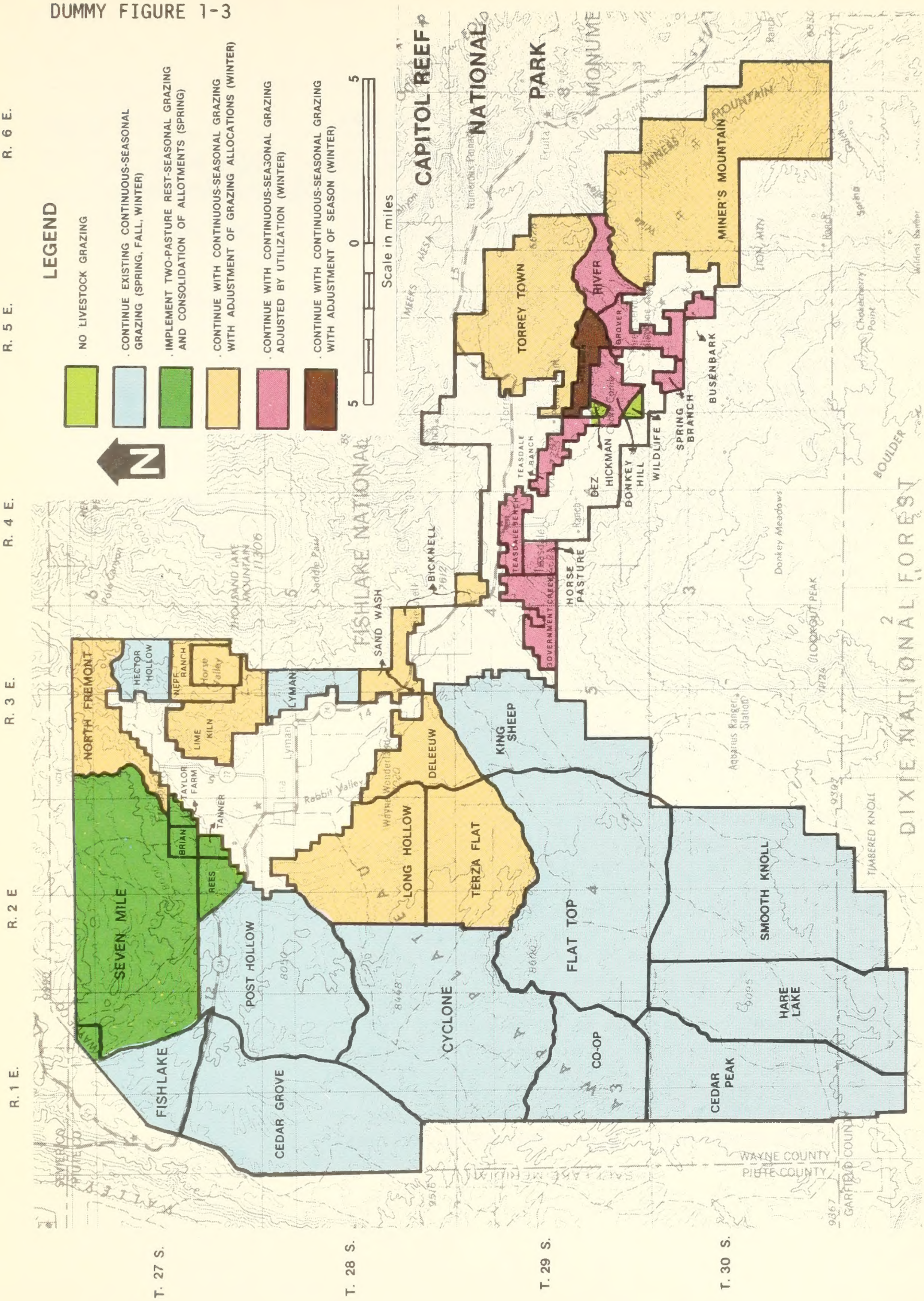
TABLE 1-2

Proposal Components

Component	Number of Allotments Involved	Number of Initially Proposed AUMs Involved	Range Developments	
No Livestock Grazing	2	10	None	
Continue Existing Continuous-Seasonal Grazing (Spring, Fall, Winter)	15	10,605	Reservoir Water troughs Pipelines	2 ea. 5 ea. 8 mi.
Implement Two Pasture Rest-Seasonal Grazing and Consolidation of Allotments (Spring)	1	595	Pipelines Water troughs Reservoir Fencing Cattleguard Chaining and Seeding	8 mi. 4 ea. 1 ea. 9 mi. 1 ea. 4,800 ac.
Continue With Continuous Seasonal Grazing With Adjustment of Grazing Allocation (Winter)	11	2,343	Fencing Reservoir	6 mi. 1 ea.
Continue With Continuous Seasonal Grazing Adjusted By Utilization (Winter)	9	565	Exclosures (5 acres)	3 ea.
Continue With Continous Seasonal Grazing With Adjustment of Season (Winter)	1	12	None	
Total	39	14,130	--	--

Source: BLM Parker Mountain Planning Documents, 1978.

DUMMY FIGURE 1-3



PROPOSAL COMPONENTS

FIGURE 1-3

TABLE 1-3

Multiple-Use Objectives

Objectives	Public Land Acreage Involved
1. Maintain the existing fair to good livestock forage condition on 15 allotments.	126,314
2. Continue to provide 617 AUMs for existing antelope populations.	144,206
3. Continue to provide 1,127 AUMs for the existing mule deer populations. Develop additional forage to provide 1,185 additional AUMs for an increased deer population. A total of 2,312 AUMs would be made available for mule deer on 39 allotments.	213,057
4. Continue to provide 295 AUMs for existing elk populations in the Fishlake, Seven Mile, and Cedar Grove allotments. Develop additional forage to provide 111 additional AUMs for increased elk populations on the Bicknell Spring cattle allotment (Cedar Peak, Hare Lake, and Smooth Knoll sheep allotments). A total of 406 AUMs would be made available for elk on seven allotments.	78,359
5. Provide 11,180 active AUMs for livestock initially and provide 11,566 AUMs in the long term on 37 allotments.	212,582
6. Within approximately 11 years, improve livestock forage condition on 17,023 acres from poor-fair to fair-good and maintain good condition on 4,136 acres of public land administered by BLM on the expanded (includes the former Brian, Rees, Tanner, and Taylor Farm allotments) Seven Mile Allotment. Forage improvement would be accomplished by reducing sagebrush and rabbitbrush from 60-80 percent of the plant composition to 30-40 percent and by increasing perennial cool season grasses and bitterbrush from 5-15 percent to 30-50 percent of the plant composition. Livestock use would be reduced initially, then increased to 816 AUMs within 15 to 20 years. This objective involves one allotment.	21,159

TABLE 1-3 (concluded)

Objectives	Public Land Acreage Involved
7. Improve or maintain the watershed conditions by increasing or maintaining vegetation ground cover to at least 20 percent on 11,018 acres of public land administered by the BLM on 11 allotments.	11,018
8. Improve or maintain the fair to good aquatic habitat (riparian vegetation) along 0.75 miles of stream in one allotment.	272
9. Improve the present poor-fair livestock forage condition on 50,792 acres to fair-good and maintain 3,502 acres in good forage condition on 11 allotments.	54,294

Source: BLM Parker Mountain Planning Documents, 1978.

2. Specific Allotment Objectives

The specific allotments to which the multiple-use objectives apply are shown on Table 1-4. In developing the objectives for each allotment, key forage plant species were used to measure forage condition, trends in condition, and intensity of grazing. The key species were chosen for their relative palatability and nutritive value for livestock and big game, or both. The key species are the first plants to show changes in grazing and can therefore be used as indicators of plant response. They can be used to measure grazing levels and trends in forage condition. Key forage species are indicated in the narrative for each component of the proposal.

The key forage plant species method of determining utilization would be considered in the preparation of AMPs and later to help determine (along with range condition and trend) whether allotment objectives were being met. This method uses an ocular estimate of the degree to which selected forage plants are grazed or browsed. (BLM Manual 4412.22B7c describes the method in detail.)

B. COMPONENTS OF THE PROPOSAL

The proposal includes the combination of five allotments into one for administrative and operational purposes, and three types of grazing treatments: no grazing, continuous-seasonal, and rest-seasonal.

1. No Livestock Grazing (two allotments, 475 acres and 10 AUMs)

No livestock grazing is proposed on two allotments. These allotments are located in critical deer winter range. Approximately 475 acres of public land are included in this proposal--less than one percent of the public land in the planning unit. These allotments are used by deer in the late fall, winter, and early spring. Though no studies have been made, it appears that use on key species has been in excess of 60 percent of the current annual growth. Ten AUMs of forage on the two allotments would be reserved exclusively for wildlife. Use of the current annual year's growth on key species would not exceed 60 percent. The existing and proposed forage use and allocation is shown in Appendix I-1.

The key forage species are Indian ricegrass, needle-and-thread grass, big sagebrush, and mountain mahogany. No livestock grazing would make all forage available for wildlife. Because deer prefer browse during the late fall, winter, and early spring, it is expected that grasses would increase. Use of not more than 60 percent of current annual growth on key species is expected to improve vigor and reproduction on browse.

2. Continue Existing Continuous-Seasonal Grazing--Spring, Fall, Winter (15 Allotments, 126,134 acres and 10,605 AUMs)

Present continuous-seasonal grazing management (grazing during the same season, in the same place, each year) would continue on 15 allotments (see Appendix I-1). These allotments would provide 8,939 AUMs of livestock use on 126,314 acres--about 59 percent of the public land included in the proposal. Spring use is during the period 4/16 to 6/30; fall use is from 6/16 to 10/31, and winter use is from 11/1 to 3/31. Exact dates of proposed use for each allotment are shown in Appendix I-1.

Ten AMPs have been prepared and 10 of the 15 allotments are currently being managed under these AMPs (see Appendix I-1). These AMPs would continue

TABLE 1-4

Specific Objectives By Allotment

Proposed Action Component and Allotments	Acres	1	2	3	4	5	6	7	8	9
NO LIVESTOCK GRAZING										
Dez Hickman	155			X				X		
Wildlife	320			X				X		
Subtotal	475									
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)										
Bicknell Spring	n/a[a]	X	X	X	X	X				
Cedar Peak	12,351	X	X	X	X	X				
Hare Lake	11,453	X	X	X	X	X				
Smooth Knoll	18,761	X	X	X	X	X				
Bicknell Winter	n/a	X	X	X		X				
Flat Top	19,256	X	X	X		X				
King Sheep	9,341	X	X	X		X				
Cedar Grove	11,755	X	X	X	X	X				
Cyclone Co-op	n/a	X	X	X		X				
Co-op	7,160	X	X	X		X				
Cyclone	17,603	X	X	X		X				
Fishlake	2,880	X	X	X	X	X				
Hector Hollow	2,002	X		X		X				
Lyman	2,037	X		X		X				
Post Hollow	11,715	X	X	X		X				
Subtotal	126,314									

TABLE 1-4 (continued)

Proposed Action Component and Allotments	Acres	1	2	3	4	5	6	7	8	9
IMPLEMENT REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring)										
Seven Mile	21,159		X	X	X	X	X			
Subtotal	21,159									
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter)										
Bicknell	1,819			X		X				X
Lime Kiln	2,960			X		X				X
Loa Winter	n/a		X	X		X				X
Deleeuw	3,238		X	X		X				X
Long Hollow	8,064		X	X		X				X
Terza Flat	7,278		X	X		X				X
Miner's Mountain	15,683			X		X				X
Neff Ranch	1,646			X		X				X
North Fremont	3,351		X	X		X				X
Sand Wash	778			X		X				X
Torrey Town	9,477			X		X				X
Subtotal	54,294									
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Winter)										
Busenbark	356			X		X		X		
Donkey Hill	1,367			X		X		X		
Government Creek	1,842			X		X		X		
Grover	1,582			X		X		X		
Horse Pasture	640			X		X		X		

TABLE 1-4 (concluded)

Proposed Action Componet and Allotments	Acres	1	2	3	4	5	6	7	8	9
River	2,029			X		X		X		
Spring Branch	492			X		X		X		
Teasdale Bench	1,200			X		X		X		
Teasdale Ranch	1,035			X		X		X		
Subtotal	10,543									
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter)										
Hickman	272			X		X			X	
Subtotal	272									
GRAND TOTAL	213,057									

Source: BLM Parker Mountain Planning Documents, 1978.

[a] n/a = not applicable, as information for these allotments is included in the sub-allotments listed there under.

to be used until updated or revised. The AMPs would include descriptions of the normal operation of the allotment including grazing sequences, seasons of use, stocking rates, studies, flexibility that would be allowed, and range developments.

Forage condition on the allotments is good to fair, and forage condition trend up to 1973 was static. Since 1973, trend has been down, but precipitation has also been about 73 percent of average during the same time. Livestock are well distributed and the allotments generally have adequate spring livestock watering places. However, in order to insure water into the summer and fall, 25 existing reservoirs would be modified, and two new reservoirs would be constructed in the Cedar Grove and Smooth Knoll allotments. Approximately 8 miles of new pipeline and five additional water troughs would also be constructed under this component (Figure 1-4).

Livestock use based on the average licensed active use for 1975-77 is currently estimated to be about 67 percent of that which could have been authorized. It is unclear how the active use levels and below-average precipitation are affecting forage condition. If forage condition were to improve, any additional forage realized would be allocated to wildlife. Because of these conditions, as well as convenience and economy of operating livestock in this manner, it is proposed to continue livestock grazing through continuous-seasonal grazing management at the existing livestock allocation level (8,939 AUMs).

Range surveys show that 12,349 AUMs of forage are available on the 15 allotments. Under the proposal, 10,605 AUMs would be allocated to livestock and big game animals. The remaining 1,744 AUMs would be available for watershed, aesthetics, and non-game wildlife uses--including use by the endangered Utah prairie dog. Livestock would receive a total of 8,939 AUMs. The allocation to big game, at the levels recommended by the Utah Division of Wildlife Resources, would be: antelope, 460 AUMs; deer, 853 AUMs; and elk, 353 AUMs (of which 111 are proposed for the Boulder Mountain herd to winter on the Bicknell Spring Allotment).

Key species on these allotments are Indian ricegrass, Letterman needlegrass, needle-and-thread grass, winterfat, black sagebrush, bitterbrush, western wheatgrass, and bluebunch wheatgrass. Use of key species would not exceed 60 percent of current annual growth.

Utilization of annual production of key species has been about 60 percent during both the spring and fall-winter periods. This utilization would be expected to continue with this proposal. The competitive situation between grasses and shrubs would be maintained. Monitoring would be done as explained in Section C3 of this chapter.

3. Implement Two-Pasture Rest-Seasonal Grazing and Consolidation of Allotments--Spring (one allotment, 21,159 acres and 660 AUMs)

It is proposed to implement rest-seasonal grazing, which would allow 1 year's rest from livestock grazing out of every 2 years and establish a firm livestock grazing season of use between May 16 and June 15 each year on about 10 percent (21,159 acres) of the public land in the planning unit.

Livestock grazing use currently allowed on four small allotments contiguous to the Seven Mile Allotment (Brian, Rees, Tanner, and Taylor Farm allotments, a total of 2,520 acres) would be combined with and permitted in the Seven Mile Allotment, which would be managed as one allotment. Authorized use by sheep on the Brian and Taylor Farm Allotments would be changed to use by cattle. All users would be permitted in the Seven Mile Allotment and all cattle on the allotment would be managed under the proposed grazing treatment.

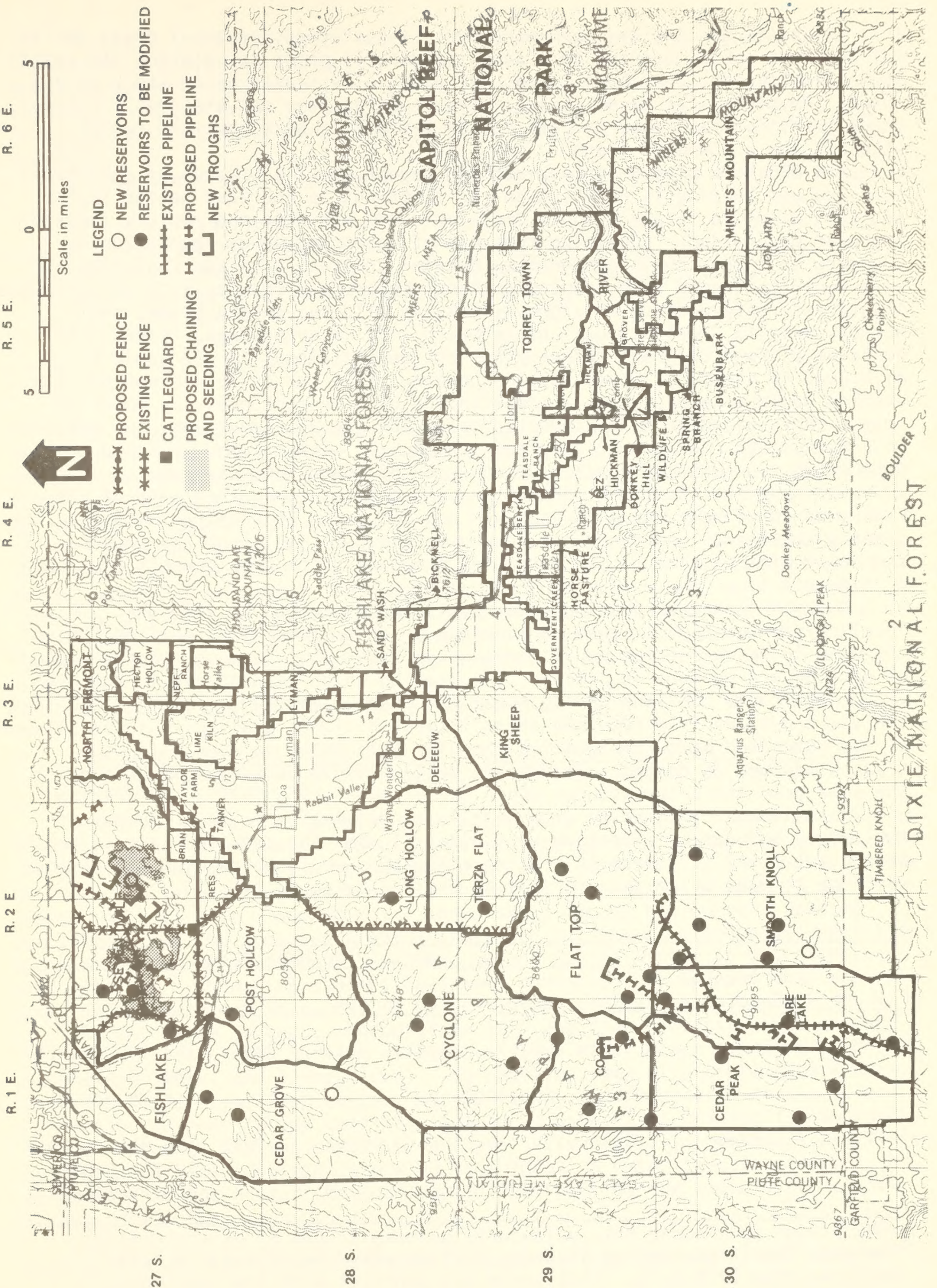


FIGURE 1-4

RANGE DEVELOPMENTS

Livestock grazing has been managed on a continuous-seasonal basis during May and June. Cattle enter this area immediately prior to entering the contiguous Fishlake National Forest and have habitually grazed along the boundary fence. Physiological needs of key forage species have not been met. Current range conditions are poor to fair on the Seven Mile Allotment and recent studies show a downward trend.

A 4,800-acre pinyon-juniper and big sagebrush (2,400 acres of each type) chaining and seeding is proposed on the allotment to increase needed spring and fall wildlife forage (Figure 1-4) for a new elk herd and rapidly increasing deer population. (Chaining consists of uprooting woody vegetation by dragging an anchor chain between two crawler tractors.) After chaining, the area would be seeded with adapted grasses, forbs, and browse, such as pubescent wheatgrass, intermediate wheatgrass, Russian wildrye, smooth brome, small burnet, alfalfa, sweet clover, bitterbrush, and Vaseyana sage. Livestock would be allowed to graze the seeding, but no additional forage would be allocated to them. It is estimated, however, that the establishment of this seeding would accelerate the accomplishment of livestock goals by about 10 years. A fence would be constructed to divide the allotment into two pastures of equal present and potential grazing capacity. The seeding would be done in October in two parts--one half, on one side of the allotment division fence, would be done the first year and the second half, on the other side of the fence, would be done the next year. A new AMP would be prepared detailing the grazing treatments and range developments needed to implement the proposal on the Seven Mile Allotment. Locations of proposed range developments are shown on Figure 1-4.

Current livestock grazing capacity is calculated to be 430 AUMs. This level of use would be allowed to continue prior to seeding as well as during the year in which seeding would first occur (Year 1). Because seeding would be done on one pasture in October, the grazing which is proposed in the previous June could continue during the first year at 430 AUMs. In Year 2, after the first pasture is seeded and the allotment divided, grazing would be allowed at the untreated pasture's grazing capacity (215 AUMs) in June while the treated pasture is rested. The second pasture would be seeded in October of the same year and both pastures would be rested; during Year 3, no grazing would be allowed. Beginning with Year 4, a progressively larger number of AUMs would be used by livestock until Year 11 when the proposed (and currently allocated) level of livestock grazing allocation would be reached. Livestock would be allowed to graze according to the following cycle:

		Year of Implementation					
Pasture	Prior to Seeding	1st	2nd	3rd	4th	5th	6+
West	Graze	Graze[a] and Seed	Rest (no grazing)	Rest	Graze	Rest	The 4th and 5th year's cycles are repeated.
East	Graze	Graze[a]	Graze and Seed	Rest	Rest	Graze	The 4th and 5th year's cycles are repeated.

[a] The year the first seeding is done, grazing would be allowed in both pastures from 5/16-6/15. This would not conflict with the seeding, as it would be done in the fall (probably during October).

Appendix I-1 shows basic facts and the current grazing situation for this component. Detail concerning the Brian, Rees, Tanner, and Taylor Farm allotments is shown in Appendix I-4. Table 1-5 shows, in detail, the proposed forage allocation prior to seeding, the estimated forage allocation for the first 10 years after seeding, and the long-term grazing allocation after 10 years.

To implement this component, the following developments would be required:

Pipelines	8 miles
Water troughs	4 each
Reservoir	1 each
Reservoir modification	3 each
Fencing	9 miles
Cattleguard	1 each
Chaining and Seeding	4,800 acres

Key forage species outside the seedings are: Indian ricegrass, Letterman needlegrass, and bitterbrush; inside the seedings they would be pubescent wheatgrass, intermediate wheatgrass, and bitterbrush. Grazing use of bitterbrush by livestock during the proposed season (May 16 through June 15) would be minimal if any. Such use would not impair the physiological requirements of this key species to make and store food, maintain vigor, and produce seed. Utilization of the other key species (Indian ricegrass and Letterman needlegrass) would be reduced by the proposed stocking rate in the year a pasture is actually grazed. In addition, these species would not be grazed by cattle for a full year while the pasture is rested from grazing. The combination of these two actions would allow the key species to restore vigor and produce seed.

Monitoring would be done as explained in section C-3 of this chapter.

4. Continue With Continuous-Seasonal Grazing With Adjustment of Grazing Allocation--Winter (11 Allotments, 54,294 acres and 2,361 AUMs)

Continuous-seasonal grazing with adjustment in grazing allocation is proposed on 11 allotments. About 25 percent (54,294 acres) of the public land in the planning unit would be managed under this component. The season of use on the 11 allotments ranges from 7/1 to 5/31. The average season of use is about 10/16 to 3/31. Appendix I-1 shows basic facts, the current grazing situation, and the proposed grazing situation for the 11 allotments under this component. These allotments have been grazed in the winter by both livestock and wildlife. Though no studies have been conducted, it appears that use on key species has been in excess of 60 percent on current year's growth.

Recent range surveys, conducted in 1975 and 1976, indicate that grazing adjustments are needed on five allotments (Lime Kiln, Miner's Mountain, Neff Ranch, Sand Wash, and Torrey Town). In addition, six allotments (Loa Winter, Deleeuw, Terza Flat, Long Hollow, North Fremont, and Bicknell) have a large percentage in poor forage condition and an adjustment in grazing is apparently needed. Current grazing capacity on these latter six allotments was calculated by comparing their dominant use with known grazing capacities for similar allotments in the area. (Methodology for calculating the capacities is shown in Appendix I-5.)

It is proposed to adjust grazing allocation, and prepare or revise AMPs, on the five allotments as indicated in Appendix I-1. On the six allotments

TABLE 1-5

Detailed Grazing Program (Two Pasture Grazing Treatment) Seven Mile Allotment
(Estimated Interim and Long-Term Grazing Allocation)

Prior to Seeding	Livestock (AUMs)						Wildlife (AUMs)						
	Year 1	Year 2	Year 3	Year 4	Year 8	Years 11+	Species	Year 1	Year 2	Year 3	Year 4	Year 8	Years 11+
430	430	215	0[a]	290[b]	590[b]	816	Antelope	8[c]	8	8	8	8	8
							Deer	104[c]	104	147	190	361	489
							Elk	53[c]	53	53	53	53	53
430	430	215	0[a]	290[b]	590[b]	816		165[c]	165	208	251	422	550

Source: BLM Parker Mountain Planning Documents, 1978.

Notes: [a] No livestock grazing would be allowed during this year as the seedings in both pastures would be rested.

[b] Annual increase in grazing for livestock from years 4 through 10 is based on the following formula:
$\frac{\text{Year 11} - \text{Year 2}}{8}$ = annual increase (see Appendix I-2).

[c] Annual increase in grazing for wildlife is based on the following formula:
$\frac{\text{Year 11} - \text{Year 2}}{9}$ = annual increase (see Appendix I-2).

where grazing capacity has been estimated, it is proposed that an initial reduction would be implemented as shown on Appendix I-1. These reductions would be postponed for 1 year, however, while new forage surveys are conducted to determine capacity. Six new AMPs would then be prepared and needed adjustments would be made in grazing allocation. For analysis purposes, it is assumed that livestock grazing would be adjusted to about 51 percent of current allocation and big game use to 161 percent of current use.

In order to control livestock use under this component, it is proposed to construct 6 miles of fence. The fence would divide South Spring so that water would be available in both the Long Hollow and contiguous Post Hollow Allotments. Two existing reservoirs in the Long Hollow and Terza Flat allotments would be modified, and a new reservoir constructed in the Deleeuw Allotment (Figure 1-4).

Key forage species are squirreltail, Indian ricegrass, crested wheatgrass, needle-and-thread grass, fourwing saltbush, winterfat, and black sagebrush.

Livestock grazing during the proposed season (winter) for these allotments would concentrate use on browse species. Reduced livestock stocking rates are proposed to reduce utilization of the key browse species to no more than 60 percent of current year's growth. Such use would allow plants to store sufficient food reserves, and leave 40 percent of current growth for seed production. Rest from grazing on these species during critical growth periods in the spring and summer would allow plants to restore vigor and produce seed.

Monitoring would be conducted as explained in section C-3 of this chapter.

5. Continue With Continuous-Seasonal Grazing Adjusted by Utilization--Winter (Nine allotments, 10,543 acres and 565 AUMs)

Continuous-seasonal grazing with level of use adjusted annually by forage utilization is proposed on 9 allotments. About 5 percent (10,543 acres) of the public land in the planning unit would be included under this component of the proposal. The season of use on the nine allotments ranges from 8/16 to 5/31. Average season of use is about 10/16 to 4/15. Appendix I-1 shows basic facts, the current grazing situation, and the proposed grazing situation for these 9 allotments. The long-term objective of meeting projected wildlife needs are also shown.

There is no data on current trend, utilization, and actual use. Due to the lack of data, it is proposed to permit current grazing allocation but condition the permit to allocate utilization on key forage species (squirreltail, Indian ricegrass, needle-and-thread grass, fourwing saltbush, and winterfat) to no more than 60 percent of the current year's growth. Table 1-6 shows the maximum allowable utilization of key species by allotment for the first year of implementation. Calculations for development of this table are shown as Appendix I-6. After the first year, the allocation would be adjusted annually as indicated by the previous year's utilization levels. (For example, if an allotment is to be grazed 30 percent by wildlife and 30 percent by livestock the first year, and utilization for that year shows wildlife needed only 20 percent, then livestock would be allowed 40 percent the next year and wildlife 20 percent.) This kind of adjustment would be made each year for 5 years, at which time 9 AMPs would be written and a firm level of grazing would be allocated. When the permitted percentage use of key species is reached, livestock operators would be notified and livestock would be removed within 5 days. No less than 20 percent utilization of current year's growth would be allocated to livestock. It is assumed that reductions would be necessary after this first year's study, and for the purpose of analysis these numbers are shown on in Appendix I-1.

TABLE 1-6

Maximum Allowable Utilization

Allotments	Maximum Percent[a] Allowable Utilization of Key Species (1st Year) Livestock	Wildlife
Busenbark	50	10
Donkey Hill	40	20
Government Creek	40	20
Grover	40	20
Horse Pasture	30	30
River	50	10
Spring Branch	20	40
Teasdale Bench	30	30
Teasdale Ranch	50	10

Sourece: BLM Parker Mountain Planning Documents, 1978.

[a] Based on a ratio of current livestock grazing allocation and wildlife use in each allotment.

If more than 60 percent utilization occurs and if livestock utilization is 20 percent or less, it is assumed that the Utah Division of Wildlife Resources would cooperate with BLM to reduce big game numbers. Methods of control include trapping, special hunting permits or extended hunting season, increased doe harvest, and controlled hunts (pre and post-season). Any such reductions involving hunting seasons, hunts, or harvest would be regulated and authorized by the Utah Board of Big Game Control as provided for in Section 23-14-6 Utah Code Annotated 1953.

Livestock would be allowed to graze the entire allotment during the designated seasons shown in Appendix I-1. Monitoring would be conducted as explained in section C-3 of this chapter, except that three exclosures would be built to monitor utilization (Figure 1-4). Each exclosure would be 5 acres in size with 2 acres fenced to eliminate all use and 3 acres to eliminate only livestock use. A comparison of use within the two divisions of the exclosure would show the amount used by wildlife. Comparing this use to that outside the exclosure would show use by livestock. For example, if use on key species inside the exclosure at the end of the grazing season shows 30 percent and use outside on key species shows 60 percent, then it can be concluded that wildlife use is 30 percent and livestock 30 percent.

One of the exclosures would be located in the Grover Allotment and would represent the Grover and River allotments. The second exclosure would be built in the Donkey Hill Allotment to represent the Donkey Hill and Teasdale Ranch allotments. A third exclosure would be built on the Government Creek Allotment to represent the Government Creek, Horse Pasture, and Teasdale Bench allotments. The three exclosures would require a total of about 1.3 miles of fence.

Though exact levels of initial and future allocations are unknown, it is calculated that approximately 82 percent of the current livestock allocation and 109 percent of the current wildlife use would be allowed.

These allotments would provide a total of 565 AUMs for both livestock and wildlife.

Limiting use to no more than 60 percent utilization of current annual growth during the winter season would provide for physiological requirements of key species. Rest during critical growth periods in the spring and summer would provide for growth, reproduction, and food storage for grasses. Limiting use to 60 percent of current year's growth on browse would allow for reproduction and food storage as 40 percent of the new stems (where all reproduction and some food storage takes place) would be reserved.

6. Continue With Continuous-Seasonal Grazing With Adjustment of Season--Winter (One allotment, 272 acres and 12 AUMs)

Continuous-seasonal grazing with elimination of livestock grazing in the summer is proposed on this allotment. Less than 1 percent (272 acres) of the public land in the planning unit would be included under this component of the proposal. The season of use on tis allotment is 6/1 to 7/31. Appendix I-1 shows basic facts, existing situation, and future use, including season, on the allotment associated with this component.

Currently two head of cattle graze for 2 months during the summer on this allotment for a total of 4 AUMs. The allotment is located along the Fremont River and riparian vegetation is in poor to fair condition.

It is proposed to allow current livestock allocation but eliminate use on key species during critical growth periods. Elimination of summer use would provide for physiological needs of plants for growth, food storage, and reproduction. Also, grazing during the proposed season while banks are frozen would aid in bank stabilization. One new AMP would be prepared.

Key forage species in the allotment are Indian ricegrass, needle-and-thread grass, and fourwing saltbush.

Monitoring would be accomplished as shown in section C-3 of this chapter.

C. SUPPORT REQUIREMENTS

1. Labor (Work-Months)

Preparation or revision of the 39 AMPs for this proposal would require approximately 74 work-months. In addition, approximately 8 work-months would be needed to administer and supervise the developments.

The developments would be done through contracts with private business. BLM personnel would complete the engineering and supervise construction. Estimated implementation and development costs are shown on Table 1-7. The operational and maintenance needs for existing and new developments are shown on Table 1-8. It is estimated that one full-time employee would be needed, along with two temporary positions of four months each, to supervise this proposal.

2. Administration and Control of Unauthorized Use

Each range user would be issued a term permit for grazing through the BLM Richfield District Office, specifying allotment, season, numbers, AUMs, and class of livestock.

Livestock grazing use would be supervised throughout the year. Grazing use in a manner other than that described in the proposal would be considered trespass unless authorized by BLM prior to the grazing period. Upon evidence of trespass, the alleged violator would be served notice to remove the livestock and make payment based on the value of forage consumed. If trespass were committed by a permittee, revocation of the grazing permit could follow in the event of failure to abide by the notice to remove the livestock and pay damages (Code of Federal Regulations part 43, subpart 4150.3).

The BLM would also make adjustments in the range management program during drought or other emergencies. Such adjustment would be designed to accomplish range management objectives and could include such actions as: 1) removal of livestock before the end of scheduled grazing season, 2) stocking at less than authorized levels, 3) temporary elimination of livestock grazing, 4) changing authorized season of use, 5) reduction of wildlife numbers, and 6) change of kind of livestock. Range condition, competition with wildlife, amount of available forage and water, and time of year would be considered in any decision to move livestock in the event of drought or other temporary problems.

3. Monitoring

All allotments included in the proposed action would be monitored. The program would include an evaluation, at the conclusion of grazing treatments, of changes in plant composition, ground cover, and forage condition. Four primary studies would be basic to the evaluation: actual grazing use (actual counts by BLM employees or figures given by livestock operators) vegetation utilization, range trend, and climate analyses (BLM Manual Section 4413.3). In addition, wildlife habitat, riparian vegetation, aquatic habitat utilization and trends, water quality, and watershed condition would be evaluated if these resource values occur on an allotment.

TABLE 1-7

Implementation and Development Costs

Item	Units	Unit Cost	Total Cost
AMP Preparation and Implementation	82 work months	$1,800	$147,600
Water Troughs	9 each	1,000	9,000
Water Pipeline	16 mi.	2,000	32,000
Reservoir	4 each	4,125	16,500
Reservoir Modification	30 each	3,050	91,500
Fencing	15 mi.	2,000	30,000
Cattleguard	1 each	2,000	2,000
Chaining and Seeding	4,800 acres	27	129,600
Exclosures	3 each	3,500	10,500
Total			$468,700

Source: BLM Parker Mountain Planning Documents, 1978.

TABLE 1-8

Annual Operational and Maintenance Costs

Item	Units[a]	Unit Cost	Responsibility		Total Cost	
			BLM	Users	BLM	Users
BLM Supervision	18 work months	$1,800	18	n/a	$27,000	n/a
Water Troughs	9 ea.	100	9	0	900	0
Water Pipeline	30 mi.	100	30	0	3,000	0
Reservoirs	66 ea.	150	20	46	9,900	0
Fences	73 mi.	100	29	44	2,900	4,400
Cattleguards	14 ea.	100	13	1	1,300	100
Exclosures	3 ea.	100	3	0	300	0
Total					$45,300	$4,500

Source: BLM Parker Mountain Planning Documents, 1978.

Note: [a] Includes proposed new developments.

Marking of livestock using public lands administered by BLM may be required (preferred methods would be ear tagging or paint marking) to monitor movement of livestock and to aid in detecting unauthorized use. Trend studies would be conducted on each allotment each year for approximately 5 years, or until a definite trend can be identified, and thereafter once every 3 years. Trend studies would be done at the same time each year. Should forage trend be downward, or remain static in areas of poor range condition, permitted and actual use would be adjusted to reverse these situations. Precipitation data would be gathered each month.

All allotments would be reevaluated periodically by an inter-disciplinary team and needed adjustments made to maintain a balance between forage production and authorized grazing use. Future adjustments would be consistent with land use plans, after consideration of actual use records, measurements of utilization, forage condition and trend, variation in the weather, and other related data.

4. Implementation

Within 1 year after publication of the final EIS, decisions which set out the program of livestock grazing on each allotment would be issued to each permittee, in accordance with 43 CFR 4160. Decisions on all grazing matters, such as seasons of use, kind of livestock, and numbers of animals, would be put in full force and effect. On the Seven Mile Allotment a decision would be issued allowing grazing at allotment level grazing capacity until pastures are established, details of the grazing plan documented, and range developments are in place. The grazing use would be redetermined at that time. Table 1-9 shows the sequence of implementation by years for this proposal.

Studies would be initiated immediately to monitor the situation on each allotment. After 3 to 5 years of data have been gathered, detailed grazing plans (AMPs) would be prepared or revised to document the grazing sequence, studies, seasons, stocking rates, and developments for each allotment.

D. DESIGN, OPERATION, AND MAINTENANCE CONSIDERATIONS FOR DEVELOPMENTS

The following are standard procedures that would be followed during various phases of planning, development, and operation of the support facilities.

1. Standard Procedures

a. After construction, disturbed areas would be revegetated with adapted grasses, forbs, and browse. Slopes less than 30 percent would be seeded with a rangeland type seeding drill. Steeper slopes would be seeded by hand.

b. All trash, packing material, and refuse would be removed from work areas on public lands and deposited in an approved sanitary landfill.

c. A qualified archaeologist would intensively survey affected areas prior to any surface disturbance. If the archaeologist determines that cultural values would be disturbed, construction would not proceed until appropriate action could be taken. (Chapter 9 contains a Memorandum of Understanding between the Bureau of Land Management and the State of Utah.)

TABLE 1-9

Grazing Management Program Implementation Schedule

Component	Year	Discussion
No Grazing	First	Continue exclusion of livestock grazing by documenting the record.
Continue Existing Continuous-Seasonal Grazing (Spring, Fall, Winter)	First	Completely implement the proposal by decision.
	Second	Construct two new reservoirs, one each in the Cedar Grove and Smooth Knoll allotments, and modify the 25 existing reservoirs located in all the various allotments.
	Fifth	Prepare or update AMPs on all 15 allotments to document the grazing program. If monitoring shows adjustments are needed, these would be made at this time through agreement and decision.
Implement Two-Pasture Rest-Seasonal Grazing and Consolidation of Allotments (Spring)	First	Consolidate allotments as proposed and reduce livestock use to 430 AUMs annually by decision. Revise the AMP to detail at least the next 10 years grazing program. Implement through agreement and decision.
	Second	Construct all range developments, modify three existing reservoirs, and chain and seed 2,400 acres in one pasture. Reduce livestock use to 215 AUMs (pasture-level carrying capacity) and allow grazing only on the untreated pasture. Allow wildlife to increase as shown in Table 1-3.
	Third	Chain and seed 2,400 acres in the second pasture. Allow no livestock grazing, as both pastures are rested.
	Fourth	Start increasing livestock and continue allowing wildlife to increase as shown in Table 1-3.
	Fifth through Tenth	Increase both livestock and wildlife use by increments.
	Eleventh	The grazing program is implemented and can continue as described on a multiple use-sustained yield basis.

TABLE 1-9 (concluded)

Component	Year	Discussion
Continue With Continuous-Seasonal Grazing With Adjustment of Grazing Allocation (Winter)	First	Prepare new AMPs and implement the proposal on five allotments by agreement and decision. Conduct a forage survey on six allotments to redetermine carrying capacity.
	Second	Prepare six new AMPs and implement the grazing proposal, including the livestock grazing reduction if needed, by agreement and decision. Construct one new reservoir in the Deleeuw Allotment and modify two reservoirs, one each in the Terza Flat and Long Hollow allotments. Construct 6 miles of fence.
Continue With Continuous-Seasonal Graing Adjusted by Utilization (Winter)	First	Prepare nine new AMPs and implement the complete proposal by agreement and decision. The annual permit would stipulate the level of use allowed on key species and provisions made for immediate removal of livestock when that level of use is reached. Three exclosures would be constructed.
	Second through Fourth	Careful monitoring of utilization on key species would be conducted and grazing use modified as explained in the proposal.
	Fifth	The nine AMPs would be revised and a firm level of livestock grazing authorization would be made through decision.
Continue With Continuous-Seasonal Grazing With Adjustment of Season. (Winter)	First	Prepare an AMP and implement the proposal by agreement and decision.

Source: BLM Parker Mountain Planning Documents, 1978.

d. No disturbance would be allowed on sites identified as potentially eligible for nomination to the National Register of Historic Places. (See Chapter 9 for Memorandum of Understanding between the Bureau of Land Management and the State of Utah.)

e. A survey of potential habitat for threatened or endangered species (including any species under consideration for formal designation as threatened or endangered) would be made prior to taking any action that could affect these species. Should BLM determine there may be an effect on listed species, formal consultation with the U.S. Fish and Wildlife Service would be initiated.

f. Clearing of vegetation would be restricted to the minimum necessary.

g. A BLM Wildlife Biologist and the Utah Division of Wildlife Resources would be consulted before construction of any range development that would affect wildlife. Their recommendations would be considered in development design.

h. Public lands in the planning unit will be evaluated for wilderness characteristics during the BLM wilderness inventory process. The present wilderness guidelines do not allow any proposed actions within identified roadless units that would impair their suitability for wilderness designation. All proposed range developments would be subject to the wilderness guidelines constraints. Proposed range developments within roadless units would be delayed, modified, or eliminated, depending upon final disposition of the roadless unit.

i. Disturbance or construction on floodplains would be limited to noncritical actions only, as provided in the BLM's final guidelines for floodplain management and Executive Order 11988.

2. Specific Procedures

a. Fences

An estimated 15 miles of additional fence would be required. Fence construction would disturb an estimated 1 acre per mile. Steel posts would be colored to blend with the landscape. Special standards in fence construction are:

Gates, except where a cattleguard is proposed, would be installed where fences would cross existing roads.

Gates would be installed at least every mile, in all right angle corners, and adjacent to the cattleguard.

All fences would be constructed to allow wildlife movement. Fences would be no higher than 39 inches; the bottom strand would be smooth wire, 16 inches from the ground. Fence would be constructed of all wire strands.

b. Water Troughs

Nine water troughs are proposed. About 1 acre of surface disturbance would result from construction of all nine. The following special design features would be met:

Small animal escape ramps would be provided in each water trough.

The lip of the water troughs would be 2 feet or less above the ground.

If waterflow from springs is sufficient, water would be maintained in all troughs between May 1 and October 30.

Overflow discharge would be a minimum of 50 feet from the watering facility and fenced to exclude livestock.

c. Pipelines

An estimated 8 miles of water pipeline would be constructed to carry water from the developed Willow Spring, on U.S. Forest Service land, to areas where water is not now available to livestock on the BLM Seven Mile Allotment. Studies indicate that sufficient water is available at Willow Spring to supply the livestock numbers proposed. An additional 8 miles of pipeline would be constructed to divert water from the existing Antelope Spring pipeline to the Cedar Peak, Hare Lake, Smooth Knoll, Co-op, and Flat Top allotments. A 1 1/4-inch diameter plastic pipe would be laid on the soil surface.

No vegetation clearing or road construction would be permitted for pipeline installations. An estimated 20 acres of surface disturbance would occur during construction of the proposed 16 miles of pipeline.

d. Reservoirs

Four reservoirs are proposed. The water storage capacity would average about 5.0 acre-feet (approximately 1,633,500 gallons). Fill material would come from the area to be inundated by the reservoir. An impervious clay (bentonite) would be obtained from commercial sources and used to seal the bottom and banks to prevent seepage. Approximately 4 acres of surface disturbance would occur during construction of the proposed reservoirs.

e. Reservoir Modification

A total of 30 existing reservoirs in the planning unit would be modified by increaseing their storage capacity. The storage area would be deepened, tapering to a small area at the bottom. Thus, the effective storage capacity would also be increased by reduction of the evaporation and soil infiltration ratios. Loss of water through soil infiltration would be further reduced by lining the storage area with bentonite.

The excavated material would be placed on top of the dam and compacted. The area of disturbance would be limited to the existing storage area and dam.

f. Pinyon-Juniper and Sagebrush Control and Seeding

Pinyon, juniper, and sagebrush on 4,800 acres would be reduced by double chaining. The chain would be dragged over the area once in one direction and then a second time in the opposite direction. The area would be seeded between the first and second chaining with adapted grasses, forbs, and browse. Seeding would be done by aircraft. Uprooted vegetation would be left in place. Standard features for chaining and seeding projects are:

> Treated areas would be rested from grazing for two growing seasons.
>
> Edges of the treated area would be irregular and conform to the surrounding terrain.
>
> Untreated strips, about 200 feet wide, would be left along each side of roads.
>
> Steep drainages (over 30 percent slope) would not be treated.
>
> Treatment would not be done within 1/2 mile of riparian areas and sage grouse strutting grounds.
>
> Adapted species of grass, forbs, and browse would be planted. Special emphasis would be given to forb and browse species such as bitterbrush, mountain mahogany, alfalfa, small burnet, and clovers.
>
> Irregularly shaped unchained areas would be left to provide escape cover for wildlife.

g. Exclosures

Three 5-acre exclosures are proposed. Each exclosure would contain two divisions: a 2-acre division would be fenced with a 7-foot-high woven-wire fence to exclude big game, and a 3-acre division would be fenced with 36-inch-high woven-wire fence with a pole on top (to exclude livestock but allow big game entrance). Approximately 1.6 acres would be disturbed during construction.

3. Maintenance

Any repairs that require actual reconstruction of an improvement would be done by BLM. Operational or preventative maintenance required annually or more frequently would be performed by the individuals holding the term permits.

III. EVOLUTION OF THE PROPOSED ACTION

This environmental impact statement is being written as part of the BLM's planning process. The allocations of vegetation originated from BLM planning documents known as the Management Framework Plan (MFP). Subsequent to completion of the MFP-2 recommendations, a range survey indicated that there was insufficient forage to meet the recommended level of forage allocation and the level of allocation was reduced. The major MFP decisions to provide forage for livestock and wildlife were adhered to, but forage allocation was reduced to the level of forage currently available. Table 1-10 identifies specific MFP-1 range management recommendations, resource conflicts which resulted, the multiple-use MFP-2 recommendations, the rationale for making those recommendations, and the resulting trade-offs.

During development of the proposal, several changes were made that deviated from the original MFP-2 recommendations.

1. No Livestock Grazing (two allotments)

   This is a new component and includes the Dez Hickman and Wildlife allotments which were formerly in the component recommending continuing with continuous-seasonal grazing adjusted by utilization.

2. Continue Existing Continuous-Seasonal Grazing (15 allotments)

   This component has been changed to include the Hector Hollow and Lyman allotments and to delete the Loa Winter, Deleeuw, Long Hollow and Terza Flat allotments. This component, which describes a continuation of existing grazing, now includes 15 allotments. Also the 530 acres unalloted to any kind of livestock grazing were deleted completely from analysis in this EIS.

   The Hector Hollow and Lyman allotments are in fair to good livestock forage condition according to a 1975 range survey. It was determined that continuing present grazing management on them would satisfactorily manage and protect the forage resource.

   The Loa Winter, Deleeuw, Long Hollow and Terza Flat Allotments were deleted from this component because considerable acreages in these allotments are in poor livestock forage condition according to the 1956-57 range survey. A recheck of the livestock forage conditions on these allotments in 1978 revealed the conditions had not improved. It became apparent that to continue existing grazing management would not improve the poor livestock forage conditions on these four allotments and could, therefore, not remain under continuation of existing grazing.

   Construction of two and modification of 25 reservoirs, five water troughs, and 8 miles of pipeline were added. These developments were added to facilitate improved distribution of grazing animals (Figure 1-4).

TABLE 1-10

Evolution of the Proposed Action Through the MFP Process

Livestock MFP-1 Recommendations	Other Resource MFP-1 Recommendations That Conflicted With Range Recommendations	MFP-1 Conflicts	MFP-2 Range Recommendations	Rationale for MFP-2 Recommendations	Trade-Off
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING					
Continue the present level of management on 15 allotments plus 530 acres of public land unalloted to livestock grazing. Allowable livestock use on these 15 allotments totals 8,939 AUMs.	Wildlife (Antelope): Allocate 414 AUMs to support existing antelope on the 15 allotments. Current and future forage requirements of antelope on the 15 allotments could be met through livestock reductions and season of use changes as shown below:	There would be immediate competition for 414 AUMs between livestock and antelope. Continued competition between antelope and livestock on about 5,000 acres of winter range in the Post Hollow Allotment.	Continue the present level (8,939 AUMs) of livestock use. Maintain existing antelope populations by providing 414 AUMs. Monitor the range condition and trend and make future grazing adjustments as necessary. As range conditions, based on ecological potentials, improve so as to increase forage production beyond current livestock allocation, allocate 529 AUMs of forage to antelope--943 AUMs in total.	Allotments are favorable for range forage improvement; antelope are doing well. Long range forage trends based on ecological potential should improve under present grazing management. With the high productive potential in these allotments, the allocated AUMs to both livestock and antelope are available. In addition, the future needs of antelope would be met.	An additional 529 AUMs of antelope forage could probably not be provided until at least 1985. Competition between antelope and livestock for winter forage on about 5,000 acres would continue.

Allotment	Reduce Livestock AUMs By
Bicknell Spring	300
Bicknell Winter	202
Cedar Grove	47
Cyclone Co-op	263
Fishlake	15
Post Hollow	163[a]
Total	943

[a] Change to spring and summer use only.

TABLE 1-10 (continued)

Livestock MFP-1 Recommendations	Other Resource MFP-1 Recommendations That Conflicted With Range Recommendations	MFP-1 Conflicts	MFP-2 Range Recommendations	Rationale for MFP-2 Recommendations	Trade-Off
	Wildlife (mule deer): Allocate 325 AUMs for existing deer. Current and future forage requirements of mule deer on the 15 allotments could be met through livestock reductions as shown below: Allotment — Reduce Livestock AUMs By: Bicknell Spring 243 Bicknell Winter 479 Cedar Grove 35 Cyclone Co-op 155 Fishlake 51 Hector Hollow 52 Lyman 52 Post Hollow 160 Total 1,227	There would be immediate competition for 325 AUMS of forage between livestock and deer.	Maintain existing deer populations by providing 325 AUMs. Monitor the range condition and trend and make future grazing adjustments as necessary. As range conditions, based on ecological potentials, improve so as to increase forage production beyond the needs of current livestock allocations, allocate 902 AUMs of forage to deer--1,227 AUMs in total.	Deer are doing well. With the high potential for increased forage production, the alloted AUMs to deer are availble. In addition, the future needs of deer would be met.	An additional 902 AUMs for deer may not be available until at least 1985.

TABLE 1-10 (continued)

Livestock MFP-1 Recommendations	Other Resource MFP-1 Recommendations That Conflicted With Range Recommendations	MFP-1 Conflicts	MFP-2 Range Recommendations	Rationale for MFP-2 Recommendations	Trade-Off
	Wildlife (Elk): Allocate 87 AUMs to support existing elk in the Cedar Grove, Cedar Peak, Fishlake, Hare Lake, and Smooth Knoll allotments. Current and future forage requirements for elk on the 15 allotments could be met through livestock reductions and season of use changes as shown below:	There would be immediate competition for 87 AUMs between livestock and elk. Continued competition between elk and livestock on about 14,635 acres of winter range in the Cedar Grove and Fishlake allotments.	Maintain existing elk populations by providing 87 AUMs in the five allotments. Monitor the range condition and trend and make future grazing adjustments as necessary. As range condition, based on ecological potentials, improve so as to increase forage production beyond the needs of current livestock allocation, allocate 209 additional AUMs of forage to elk.	Elk are doing well. With the high productive potential, the alloted AUMs to elk are available. In addition, the future needs of elk would be met.	An additional 209 AUMs for elk may not be available until at least 1985. Competition between elk and livestock for winter forage on about 14,635 acres would continue.

Allotment	Reduce Livestock AUMs By:
Cedar Grove[a]	150
Cedar Peak	53
Fishlake[a]	35
Hare Lake	53
Smooth Knoll	5
Total	296

[a] Change to spring and summer use only.

TABLE 1-10 (continued)

Livestock MFP-1 Recommendations	Other Resource MFP-1 Recommendations That Conflicted With Range Recommendations	MFP-1 Conflicts	MFP-2 Range Recommendations	Rationale for MFP-2 Recommendations	Trade-Off
IMPLEMENT TWO PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS					
Implement a grazing system on the Seven Mile Allotment to allow vegetation one year rest from grazing out of two. License livestock use from May 15 through June 16. Stock at pasture level grazing capacity of 281 AUMs annually. After 15-20 years, restore the full 816 AUMs current allocation. Combine the Brian (33 AUMs), Taylor Farm (18 AUMs), Tanner (0 AUMs) and Rees (32 AUMs) allotments with the Seven Mile Allotment and allocate the total of 83 AUMs from these allotments to the Seven Mile Allotment and issue permits to the livestock operators to graze cattle during the same season (5/16-6/15) with the Seven Mile users.	Wildlife Recommendation: Allocate AUMs of forage for existing wildlife as follows: Antelope 8 Deer 132 Elk 25 Total 165 To meet current and future wildlife forage requirements, the following AUMs would need to be provided: Antelope 33 Deer 489 Elk 53 Total 575	There would be immediate competition for 165 AUMs of forage between livestock and wildlife.	Implement a grazing system on the Seven Mile Allotment as described in MFP-1 recommendations, but stock each pasture at 215 AUMs. Allocate 165 AUMs for Wildlife in the Seven Mile Allotment (includes 127 AUMs in the present Seven Mile Allotment and 38 from the Brian, Taylor Farm, and Rees allotment). Chain and seed to adapted grass, forbs, and browse 4,800 acres of pinyon-juniper and big sagebrush range thus providing 1,292 additional AUMs in the Allotment. Include the Brian, Taylor Farm, Tanner, and Rees allotments within the Seven Mile Allotment for grazing. Same season of use (5/16-6/15) and same kind of livestock (cattle). License the existing AUM allocation (83 AUMs) with the present Seven mile livestock users.	Implementation of the grazing system would improve forage condition and compliment the protection and management of the 4,800 acres seeding. Inclusion of the small allotments with the Seven Mile Allotment would simplify administration and management. Deer wintering in the Brian, Taylor Farm, Tanner, and Rees allotments would benefit as all sheep and winter use would be eliminated. This would in essence make 83 AUMs immediately available for winter wildlife use. The 4,800 acre chaining and seed- would accelerate reaching goals of providing 816 AUMs for livestock and 575 AUMs for wildlife in 10-11 years rather than 15-20 years under natural conditions.	Initial loss of 127 livestock AUMs in the Seven Mile Allotment as these are allocated to wildlife. Increase in use of 83 AUMs by livestock on the useable portions of the Seven Mile Allotment as the location of use from the Brian, Taylor Farm, and Rees allotments is changed. A change in season of use and kind of livestock would terminate grazing by sheep. The change would be more of an inconvenience rather than an economic loss. Current practice is to remove forage by using large sheep herds moving through the allotments during passage to from other areas of the Parker Mountain Planning Unit.

TABLE 1-10 (continued)

Livestock MFP-1 Recommendations	Other Resource MFP-1 Recommendations That Conflicted With Range Recommendations	MFP-1 Conflicts	MFP-2 Range Recommendations	Rationale for MFP-2 Recommendations	Trade-Off
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION					
Adjust livestock allocation to current livestock forage carrying capacity by allowing 1,334 AUMs on 11 allotments, with the potential to increase to 2,272 AUMs in 15-20 years.	Wildlife: Allocate 567 AUMs for existing wildlife (103 for antelope, and 464 for deer). Current and future forage requirements of wildlife could be met by adjusting livestock as shown below: Allotment — Reduce Livestock AUMs by Bicknell 43 Lime Kiln 52 Deleeuw 168 Long Hollow 317 Terza Flat 308 Miner's Mountain 211 Neff Ranch 52 North Fremont 226 Sand Wash 34 Torrey Town 172 Total 1,583	There would be immediate competition for 567 AUMs between livestock and wildlife.	Maintain existing wildlife populations by allocating 567 AUMs in the 11 allotments. In approximately 15-20 years, provide 2,272 AUMs for livestock; and 1,016 additional AUMs of forage for wildlife--1,583 for wildlife in total.	Reduction of livestock AUMs would make needed forage immediately available for wildlife.	The additional 1,016 AUMs of additional forage may not be available until at least 1985. There would also be an immediate loss of 567 AUMs for livestock.

TABLE 1-10 (continued)

Livestock MFP-1 Recommendations	Other Resource MFP-1 Recommendations That Conflicted With Range Recommendations	MFP-1 Conflicts	MFP-2 Range Recommendations	Rationale for MFP-2 Recommendations	Trade-Off
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY USE					
License 11 allotments in the Torrey-Teasdale-Grover area at current allocation levels, seasons of use, and kinds of livestock. Limit utilization to 60 percent on key forage species. Allotments include Busenbark, Dez Hickman, Donkey Hill, Government Creek, Grover, Horse Pasture, River, Spring Branch, Teasdale Bench, Teasdale Ranch, and Wildlife.	Wildlife: Allocate 180 AUMs to support existing deer populations on these allotments. Current and future needs of deer on the 11 allotments can be met through livestock reductions as shown below: Allotment — Reduce Livestock AUMs by Busenbark 12 Dez Hickman 0 Donkey Hill 25 Government Creek 91 Grover 48 Horse Pasture 14 River 48 Spring Branch 11 Teasdale Bench 20 Teasdale Ranch 22 Wildlife 0 Total 291	There would be immediate competition for 180 AUMs between livestock and deer.	Continue to license the 11 allotments as explained in livestock MFP-1 recommendations. Except, that the 60 percent utilization level will be refined to allow maximum percent use of key forage species as follows: Allotment — Livestock — Wildlife Busenbark 50 10 Dez Hickman 0 60 Donkey Hill 40 20 Government Cr. 40 20 Grover 40 20 Horse Pasture 30 30 River 50 10 Spring Branch 20 40 Teasdale Bench 30 30 Teasdale Ranch 50 10 Wildlife 0 60 Livestock would be allowed no less than 1/3 of all available forage.	Limiting use on key species as recommended would result in sufficient forage being made available to wildlife to satisfy needs. It would also continue to maintain the existing favorable watershed conditions. It is not desirable that wildlife be allowed to increase on these allotments until all livestock must be removed. Therefore, livestock would always be allowed at least 20 percent of the 60 percent allowable forage utilization.	It is estimated that the following livestock reductions would occur: Allotment — AUMs Busenbark 5 Dez Hickman 0 Donkey Hill 10 Government Cr. 31 Grover 0 Horse Pasture 8 River 18 Spring Branch 0[a] Teasdale Bench 13 Teasdale Ranch 11 Wildlife 0 Total 96 [a] A 6 AUM increase is proposed. This represents an overall reduction of 21 percent from current grazing allocation. The 60 percent use on key forage species is considered between moderate and heavy grazing and would likely continue to hold range in poor condition on 2,941 acres in the area represented by this sub-component.

DUMMY TABLE 1-10 page 7

TABLE 1-10 (concluded)

Livestock MFP-1 Recommendations	Other Resource MFP-1 Recommendations That Conflicted With Range Recommendations	MFP-1 Conflicts	MFP-2 Range Recommendations	Rationale for MFP-2 Recommendations	Trade-Off
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON					
Continue the existing grazing management and allow current allocation in the Hickman Allotment.	Wildlife: Eliminate all livestock grazing from the Hickman Allotment to protect and enhance riparian habitat and fisheries along 0.75 miles of the Fremont River.	Apparent continued damage to riparian habitat and continued low quality fisheries along 0.7 miles of the Fremont River.	Change the season of use from summer to winter and allow current allocation in the Hickman Allotment.	The length of river in the Hickman Allotment represents less than 2 percent of the total length of the Fremont River in the planning unit. Riparian habitat is currently in fair condition. Grazing during the winter when vegetation is dormant and banks are frozen should help stabilize banks and improve fish habitat.	Fish habitat would be slow to recover and remain in a lower condition for as long as 20 years.

Source: BLM Parker Mountain Planning Documents, 1978.

3. Implement Two-Pasture Rest-Seasonal Grazing and Consolidation of Allotments (one allotment)

It was determined that implementation of a two-pasture rest-seasonal grazing system would require construction of the following developments: one reservoir, 8 miles of pipeline, four water troughs, 9 miles of fencing, one cattleguard, and modification of three reservoirs.

4. Continue With Continuous-Seasonal Grazing With Adjustment of Grazing Allocation (11 allotments)

This is a new component of the proposal. The allotments involved here were previously included under other recommendation areas in MFP-2. Recent range surveys conducted in 1975 and 1976 indicate that adjustments are needed on the Lime Kiln, Miner's Mountain, Neff Ranch, Sand Wash, and Torrey Town allotments. In addition, six allotments (Loa Winter, Deleeuw, Terza Flat, Long Hollow, North Fremont, and Bicknell) have large percentages of area in poor livestock forage condition. Grazing adjustments are apparently needed on these allotments to improve forage conditions.

In order to implement this component, 6 miles of new fence and one reservoir would be constructed.

This component, which describes the necessity of, and method for, adjusting grazing allocation, now includes 11 allotments.

5. Continue With Continuous-Seasonal Grazing Adjusted By Utilization (nine allotments)

Ten allotments were deleted from this component and placed in other components. Two allotments were added. This component, which describes an adjustment in grazing by using key forage species, now includes 9 allotments. Two of the allotments (Hector Hollow and Lyman) are in good to fair forage condition and were added to the component which would continue existing grazing. The other six allotments (Bicknell, Lime Kiln, Neff Ranch, North Fremont, Sand Wash, and Torrey Town) were placed in new components which involve an adjustment in grazing allocation. The other two allotments (Dez Hickman and Wildlife) were placed in a new component of no livestock grazing.

Three exclosures of 5 acres each would be constructed as part of this component. Data obtained by monitoring these exclosures would be used along with other data to determine adjustment of livestock grazing.

6. Continue With Continuous-Seasonal Grazing With Adjustment of Season (one allotment)

This component was a recommendation in MFP-2. The MFP recommended terminating grazing on the Hickman Allotment (4 AUMs) to protect riparian vegetation. A vegetation survey (BLM, 1978) indicated the riparian vegetation is generally in good condition. It is felt that changing the season of use from summer to winter could accomplish desired objectives in this allotment.

IV. INTERRELATIONSHIPS

Grazing use of the Parker Mountain Planning Unit is one phase in an overall grazing program of other federal, state, and private lands. Of the approximately 80 livestock operators who use the planning unit, only three do not use other public lands. Table 1-11 shows relationships of grazing on the planning unit with grazing use on other federal and state lands. Parker Mountain provides key seasonal range for many of the livestock operators who use it. Alterations in grazing programs on the planning unit could result in disruption of an operator's year-round operations.

A. FEDERAL AGENCIES

1 Bureau of Land Management

Sixty-five livestock operators in the Parker Mountain Planning Unit graze the same livestock in other BLM units such as the Henry Mountain Resource Area and the Sevier River Resource Area (see Table 1-11).

2. U.S. Forest Service

The U.S. Forest Service administers lands to the north, east, and south of this planning unit. The northern and eastern portions are managed from the Loa Ranger District of the Fishlake National Forest, while the southern part is managed by the Teasdale Ranger District of the Dixie National Forest. A cooperative agreement between the BLM and Forest Service would be necessary to allow use of water from Willow Spring on U.S. Forest Service land. Fifty-eight livestock operators (Table 1-11) on the planning unit graze the same animals on these adjacent Forests, either immediately before entering or upon leaving the planning unit. Most big game animals wintering on BLM managed public land spend summers on adjacent National Forest lands. Increased big game numbers and livestock grazing proposals are compatible with U.S. Forest Service plans and goals. Water needed for the pipelines would come from U.S. Forest Service lands. Agreements or consultation have already been made or initiated with the U.S. Forest Service.

3. The U.S. Fish and Wildlife Service

The planning unit has two endangered animal species (the Utah prairie dog and the bald eagle), two proposed endangered (F.R. June 16, 1976) plant species, and two candidate threatened plant species (Welsh, et al., 1975). Consultation with the endangered species unit of this agency is required if adverse impact to one of these species or its habitat is expected. This agency also has responsibility for an annual animal damage control program developed in conjunction with BLM, Utah Division of Wildlife Resources, and livestock operators.

With the exception of a few allotments, the entire planning unit and surrounding areas are under a program of predator removal. Control efforts are extensive and include aerial gunning, denning, calling (shooting),

TABLE 1-11

Number and Distribution of Livestock Operator Usage by Allotment on USFS, BLM, State of Utah State Land Block Ranges

Total Permittees in Allotment	BLM RM-Allotments	Number of Animals and Class	Season of Use	Interrelated Use (Number of Users)				
				Fishlake Forest	Dixie Forest	State Land Block	BLM HMRA[a]	BLM SRRA[b]
3	Bicknell	19 C[c]	11/1-3/31		1		2	
9	Bicknell Spring	1,019 C	5/16-6/30		9		7	
13	Bicknell Winter	843 C C	4/16-5/15 9/1-3/31		9		10	
1	Busenbark	150 S	12/1-12/31					
11	Cedar Grove	308 C 1,980 S	5/11-6/30 10/1-1/15	11		1	3	11
6	Cedar Peak	1,289 S	5/16-6/30 9/11-10/25	2	5			
9	Co-op	929 S	5/16-6/30			9		
5	Cyclone	895 S	5/16-6/30 10/1-11/15	4		2		
17	Cyclone Co-op	618 C	5/1-5/31			15	3	
1	Deleeuw[e]	350 S	10/16-3/31	1				
1	Donkey Hill	10 C	10/16-3/15		1			
1	Fishlake	1,800 S	6/1-6/25 10/21-11/10	1				1
6	Flat Top	1,150 S	5/16-6/30 11/1-1/31		6			
1	Govt. Creek	147 S	12/1-2/28			1		
2	Grover	17 S	11/1-5/31		2		2	
4	Hare Lake	1,908 S	5/16-6/30 9/15-10/25		4			
3	Hector Hollow	109 C 100 S	3/31-6/10 12/1-1/31	3				
1	Horse Pasture	2 C	8/16-4/15					

TABLE 1-11 (concluded)

Total Permittees in Allotment	BLM RM-Allotments	Number of Animals and Class	Season of Use	Interrelated Use (Number of Users)				
				Fishlake Forest	Dixie Forest	State Land Block	BLM HMRA[a]	BLM SRRA[b]
1	Hickman[e]	2 C	11/1-4/30		1			
2	King Sheep	145 S	11/1-2/28				1	
6	Lime Kiln	7 C	11/1-2/28	1	1	4		
2	Loa Winter	96 C	10/16-3/31	3	1		2	
4	Long Hollow	1,200 S	1/16-3/20					
2	Lyman	37 C	12/1-3/15	1		1	2	
5	Miner's Mountain[e]	160 C	5/1-5/31 11/1-11/30		5		5	
2	Neff Ranch	300 S	1/6-2/25			2		
2	North Fremont	450 S	11/1-4/30	2				
13	Post Hollow	20 C 1,345 S	10/15-3/31	8		2	2	
2	River	13 C	10/16-4/15				1	
1	Sand Wash	350 S	2/1-2/25	1				
17	Seven Mile[e]	766 C	5/16-6/15	17		1	5	
4	Smooth Knoll	1,510 S	5/16-6/30 9/16-10/31		4			
1	Spring Branch	2 C	11/1-4/15		1		1	
1	Teasdale Bench	100 S	1/1-1/31					
3	Teasdale Ranch	20 C	10/16-4/15		2		2	
5	Terza Flat	1,150 S	2/1-3/15		5			
5	Torrey Town	112 C	10/16-5/31	1	1		5	

Source: BLM Grazing Files, 1978.

Notes: [a] HMRA--Henry Mountain Resource Area.

[b] SRRA--Sevier River Resource Area.

[c] Cattle.

[d] Sheep.

[e] Change in season proposed.

and steel trapping. Target species are primarily coyote and occasionally mountain lion, bear, and bobcat. The predator control program apparently aids the economics of the livestock operations on the planning unit and would be required to ensure the grazing of as many as 17,882 sheep in the planning unit.

B. STATE AGENCIES

1. Utah State Land Board

The Utah State Land Board administers 18,884 acres of state-owned land, throughout the planning unit, intermixed with public land alloted to grazing. Generally these lands are leased to livestock operators who use contiguous public lands. A stipulation of the State of Utah Lease Agreement states, "Lessee shall have the right to use the above described property only for the purpose of grazing livestock. The lessor reserves the right to determine the number, kinds of livestock, and season of use. When the above property is located within the lessee's federal allotment boundary, the number, kinds of livestock, and season of use will concur with the federal agencies recommendations unless the lessor determines otherwise." Most state lands are leased for grazing by livestock. A livestock operator can enter into an exchange-of-use agreement with BLM which stipulates that any unfenced state lands be managed with contiguous BLM public land. The BLM establishes the amount of livestock forage available on these scattered tracts of state land.

The State of Utah also administers a 45,547-acre block of state land (known as the "State Land Block") contiguous to the western boundary of the Parker Mountain Planning Unit. Forty of the 179 permittees on the Parker Mountain Planning Unit also have leases on the State Land Block.

2. Utah State Engineer

The State Engineer controls the allocation of water resources within the state. Because the proposed action involves water developments, close cooperation must be maintained between BLM and the Utah Division of Water Rights to assure appropriation of water needed to implement this proposal.

3. Utah Division of Wildlife Resources

The UDWR is charged with management of wildlife in the state for the benefit of the public. Explicit within this charge are the following:

> Maintain numbers of and accessibility to the several species of game animals sufficient to perpetuate the traditional sports of hunting, fishing, and trapping as principal uses of wildlife while simultaneously providing for other--recreational, educational, scientific, aesthetic, therapeutic, and economic uses--of all wildlife. (Utah Wildlife Board, Aug. 29, 1973).

Specific plans and goals of the UDWR for the planning unit include but are not limited to:

> Work with BLM, USFS, and the State Land Board, to provide for a reasonable number of wildlife as provided for in the Taylor Grazing

Act, the latest grazing regulations, and the Federal Land Policy and Management Act (UDWR, Bowden, 1978).

The UDWR in 1977 estimated future demands for elk, mule deer, and antelope; these estimates were used to determine long-term objectives and allocations of wildlife forage. Vegetation surveys indicated sufficient forage was not available to meet estimated future wildlife demands and the forage allocation was less than requested by UDWR. Table 1-10 documents the resolution of these conflicts through the MFP process.

A newly transplanted herd of elk on Boulder Mountain has not yet established a definite pattern of winter use. However, some public lands administered by BLM could be used by this herd and 111 AUMs would be allocated to their use.

C. PRIVATE LANDS

Most of the fertile, arable bottom lands, and stream bottoms are privately owned. On the large Awapa Plateau, private land holdings are very small. Each livestock operator on the BLM-managed public land is required to have sufficient property to be capable of supporting his livestock for 2 months. Most of the land in Wayne County is either base property or is used at sometime during the year to support a yearlong livestock operation.

Approximately 2,453 acres of private land are intermingled with public land administered by BLM in the planning unit. These private lands may be offered to the BLM for exchange-of-use management. Should these lands be offered and BLM accept, then grazing would be administered the same as on contiguous public land. An exchange-of-use agreement may be issued to any applicant having ownership or control of non-federal land interspersed and normally grazed in conjunction with the surrounding federal range. This agreement would allow grazing on these lands at a level which would not exceed their grazing capacity as determined by the BLM. Payment of fees would not be required, but the Bureau would have the management and control of the non-federal land for grazing purposes.

Limited crucial deer winter ranges exist in the Grover-Teasdale area. Complaints from private land owners of depredation of crops by deer have resulted in deer reduction programs. Most of this depredation occurs during the winter as wildlife are forced onto small tracts of federal and state land contiguous to private property.

CHAPTER 2

DESCRIPTION OF THE ENVIRONMENT

CHAPTER 2
DESCRIPTION OF THE ENVIRONMENT

A. INTRODUCTION

This chapter describes the Parker Mountain Planning Unit's environment. The environmental components discussed are: climate, air quality, topography, soils, water resources, vegetation, animal life, archaeological resources, visual resources, recreation, livestock grazing, wilderness, economics, and sociology. While the chapter generally focuses upon the planning unit, in some instances it also describes a broader, regional environment.

B. EXISTING ENVIRONMENT

1. Climate

The climate of the Parker Mountain Planning Unit is extremely variable because of local changes in topography and elevation. Table 2-1 shows average temperature, growing season, and precipitation at two different elevations, as well as seasonal distribution of precipitation. Seventy-two years of records at the U.S. Weather Bureau Station at Loa, Utah indicate that the lowest annual precipitation is 3.05 inches, the highest 14.90 inches, and the average 7.24 inches.

Nineteen annual precipitation totals from the Loa Station are included in Table 2-2 (U.S. Weather Bureau Data) and Figure 2-1 shows annual precipitation distribution in the unit. Periods of below average or average annual precipitation are generally interruped by a period of above average annual precipitation. No cyclic occurence of drought patterns is apparent.

2. Air Quality

In general, air quality within the planning unit is excellent. There are no point-source industrial discharges of atmospheric contaminants within the unit. Localized areas of periodic air quality deterioration in the form of particulates may result from open burning or from dust produced by sand and gravel removal operations or associated with wind erosion of fallow ground (BLM-Parker Mountain Planning Unit Planning Documents, 1978a).

3. Topography

The Awapa Plateau (Parker Mountain), which reaches elevations of 9,600 feet on its western edge, is the dominant topographic feature in the western half of the planning unit and is characteristic of the exceptionally high north-south trending plateaus that comprise the High Plateaus of Central Utah. The eastward-sloping plateau surface is relatively flat to rolling (see Figure 2-2). Well-developed drainage patterns are not common on the plateau, the exception being Big Hollow, a 300 to 500-foot-deep steep-sloped canyon that drains northeastward into Rabbit Valley.

Rabbit Valley comprises the central portion of the planning unit. This bow-shaped valley is some 16 miles long, 1 to 6 miles wide, and is traversed by the Fremont River. Elevations in the valley range from 6,900 to 7,200 feet above sea level.

The topography of the eastern portion of the planning unit is dominated by Miner's Mountain, whose broad summit attains an elevation of 7,800 feet.

TABLE 2-1

Summary of Climate

Climatic Factor (average)	Elevation 6,000 to 7,500 Feet	 7,500 to 9,000 Feet
Monthly Temperature		
Spring and Summer	55° F. to 65° F.	50° F. to 60° F.
Fall and Winter	30° F. to 35° F.	25° F. to 30° F.
Growing Season (Frost-free days)	80 to 120 days (May to September)	60 to 80 days (June to August)
Precipitation	6 to 8 inches per year as rain and snow.	12 to 20 inches per year as rain and snow.

Percent of Total Annual Precipitation
Summer (July-September): 47 percent (Intense thundershowers)
Fall (October-November): 13 percent (Rain and snow)
Winter (December-April): 24 percent (Snow)
Spring (May-June): 16 percent (Rain)

Sources: Utah Agricultural Experiment Station, Logan, Utah, 1977; and U.S. Weather Bureau Data, 1892-1911, and 1922-1978.

TABLE 2-2

Annual Precipitation Totals Loa Station

Year	Precipitation (inches)	Year	Precipitation (inches)
1978	6.91	1968	8.04
1977	4.88	1967	8.56
1976	4.11	1966	5.65
1975	6.21	1965	11.01
1974	4.66	1964	6.51
1973	5.92	1963	6.85
1972	7.88	1962	4.72
1971	7.46	1961	10.78
1970	7.24	1960	7.76
1969	11.22		

Source: U.S. Weather Bureau, 1960-1978.

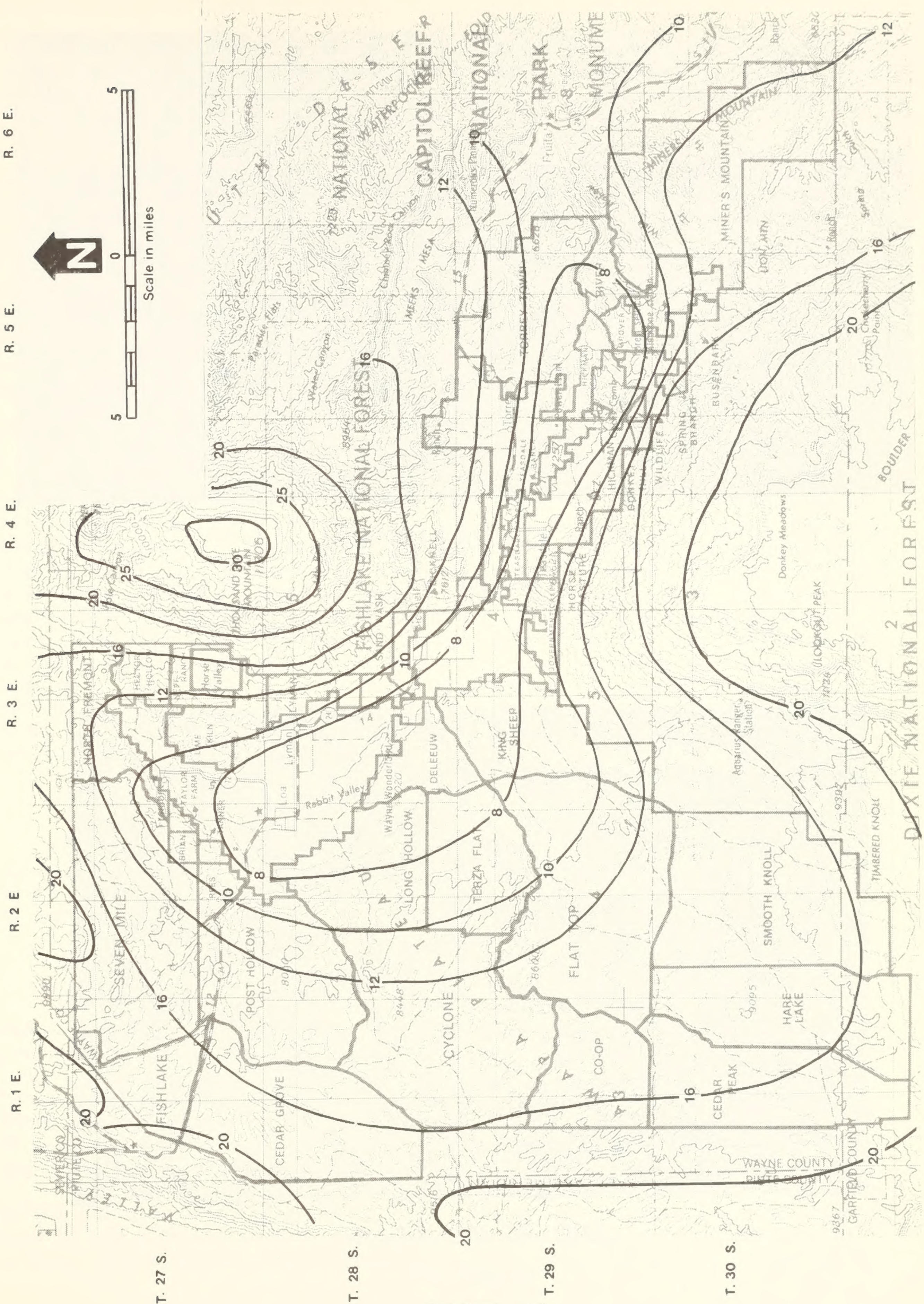
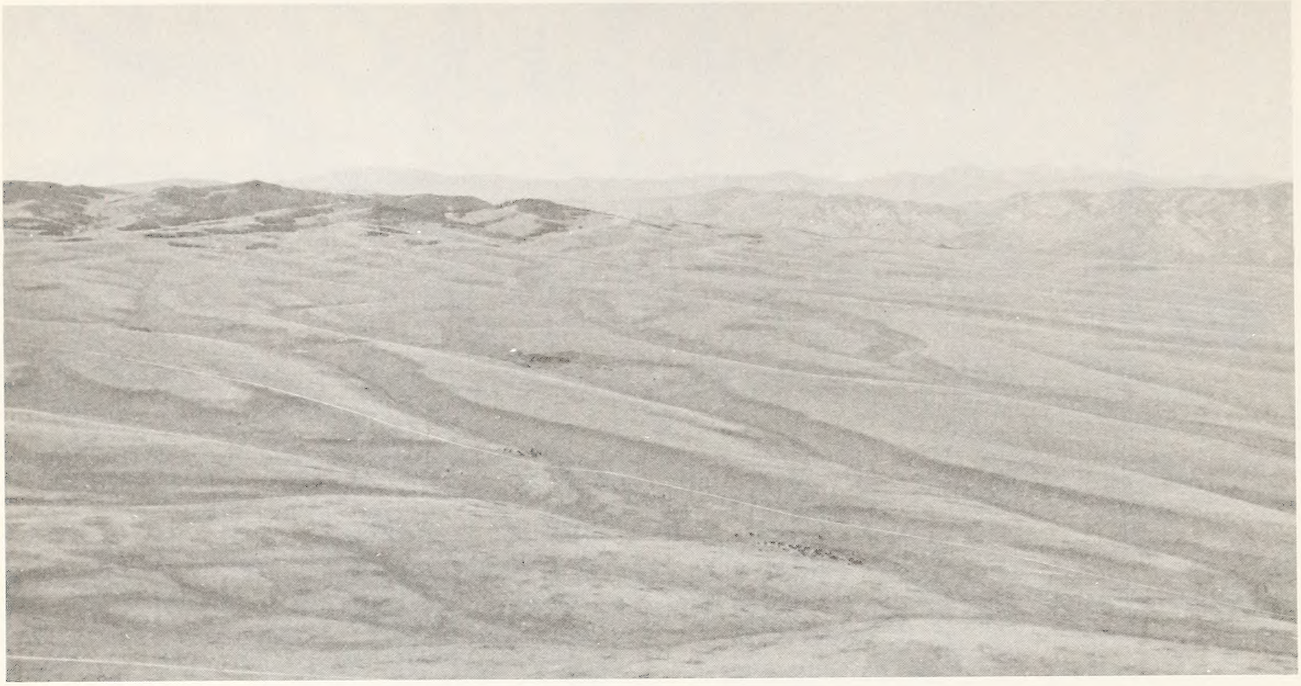


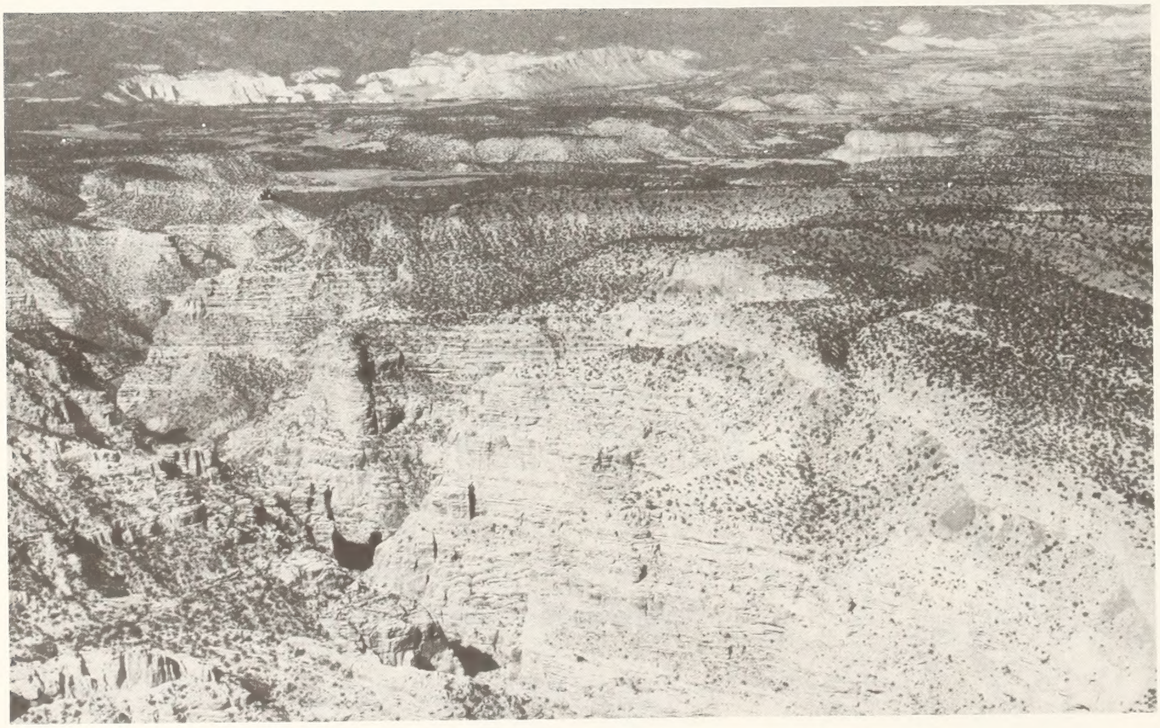
FIGURE 2-1

ANNUAL PRECIPITATION DISTRIBUTION



THE AWAPA PLATEAU

FIGURE 2-2



MINERS MOUNTAIN

FIGURE 2-3

The broken, rocky flanks of the mountain form numerous hogbacks and escarpments (see Figure 2-3). The Fremont River has eroded a deep canyon across the northern flank of the mountain. It is within this canyon that the lowest elevations (6,000 feet) in the planning unit are found.

The planning unit's topography is shown on Figures 2-4 and 2-5.

4. Soils

a. Soil Associations

Soil association data on a family or series level are not available for the planning unit. However, the Soil Conservation Service (SCS) conducted a soil survey in 1969 and 1970 and identified soils of Wayne County according to their properties. Seven separate associations were found on the Parker Mountain Planning Unit. Their locations are shown on Figure 2-6. Appendix II-2 contains a complete description of these soil associations.

b. Sediment Yield

Sediment yield estimates were taken from sediment yield ratings prepared by BLM personnel. Three ratings were taken, one for the entire Parker Mountain Planning Unit, one for the areas above The Narrows, and one for the areas below The Narrows. (The Narrows is a point near which Pine Creek joins the Fremont River, and which divides the unit into two segments as shown on Figure 2-7.) The results of these ratings, as shown in Appendix II-3, indicate that the entire unit sediment yield is about 0.6 acre-feet per square mile per year. The area above The Narrows (western portion of the unit) yields about 0.4 acre-feet per square mile per year. The area below The Narrows (eastern portion of the unit) yields about 2.5 acre-feet per square mile per year. The increased yield of the eastern portion is due largely to physiographic conditions, over-grazing, and climate (Parker Mountain URA). Appendix II-4 gives the methodology for determining sediment yield.

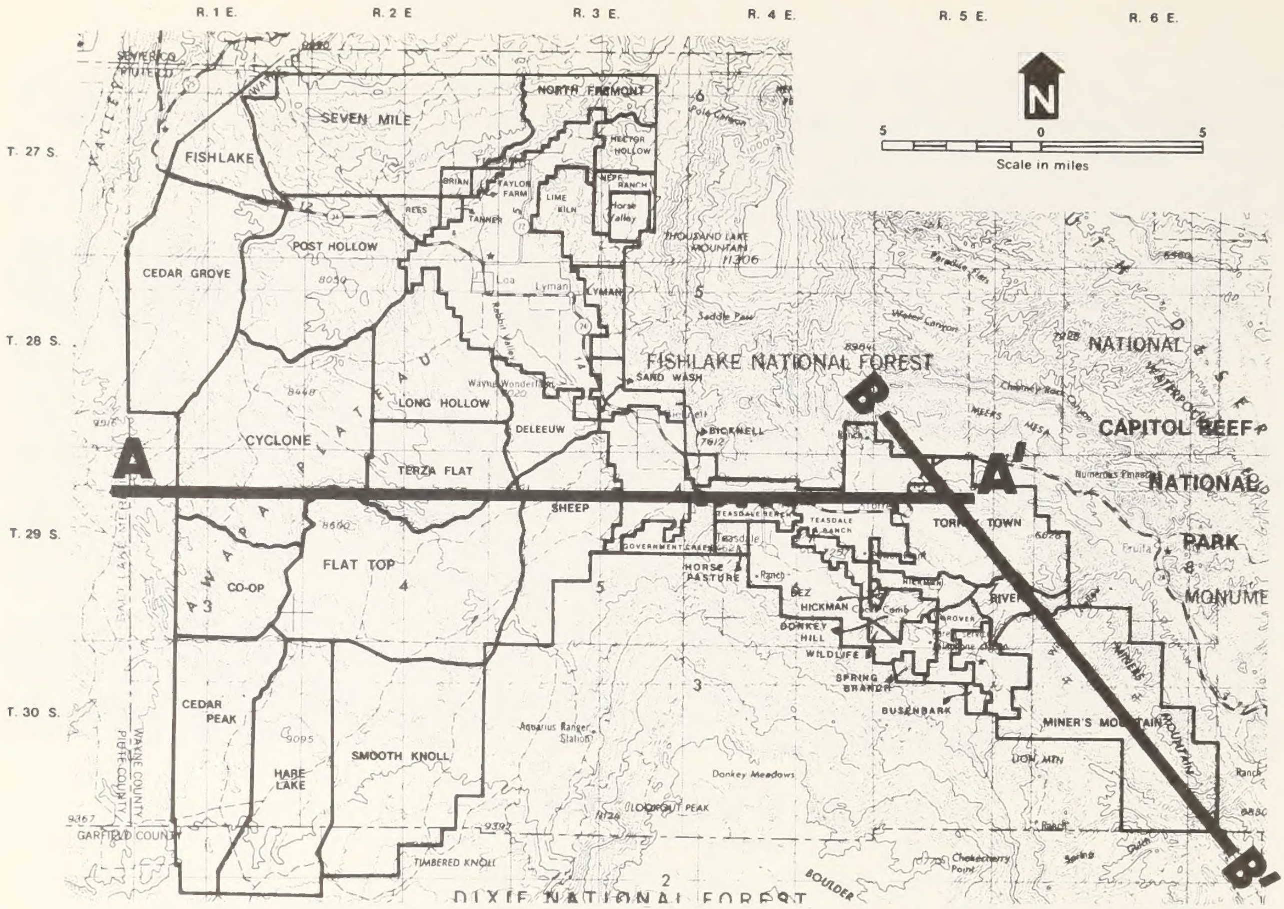
c. Seeding Suitability

Information from the SCS 1970 soil survey indicates the probability of seeding success of each soil association. The proposed seeding treatment is to be done on land with associations 2 and 7 (see Appendix II-2). The range of success for reseeding these soils is 30 to 70 percent.

d. Erosion Condition

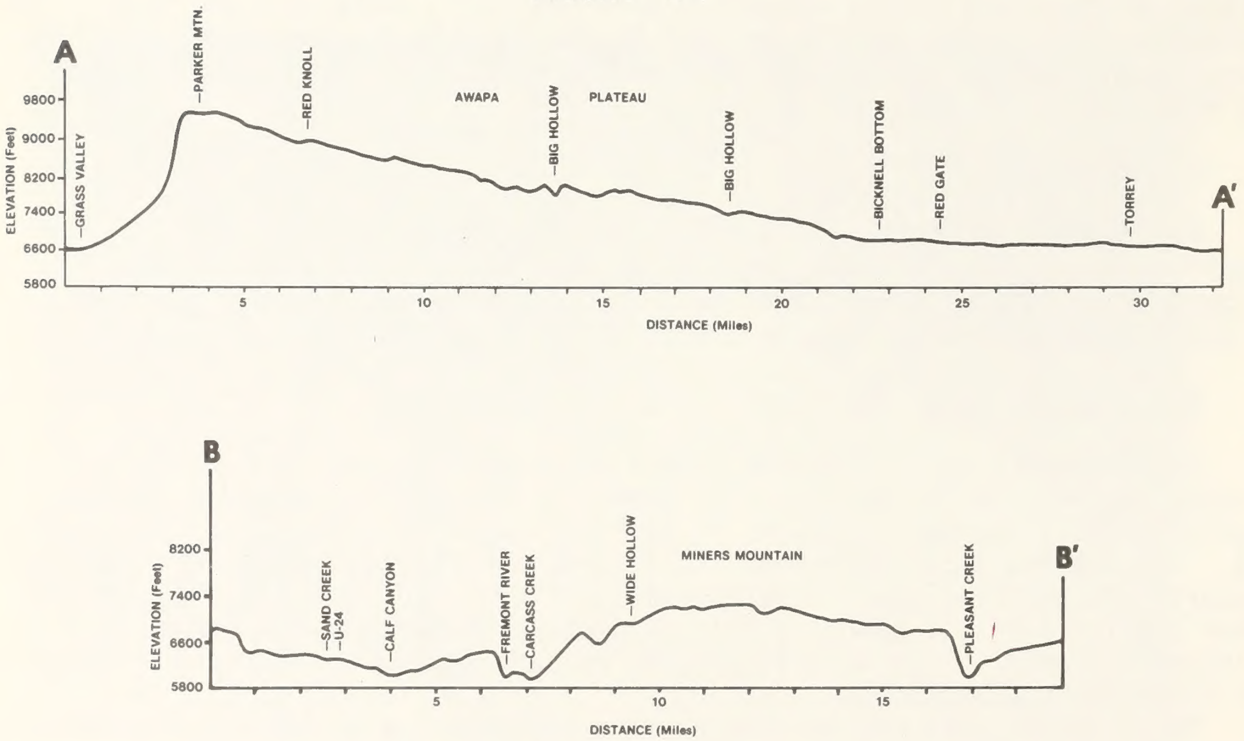
Available information on the amount of natural erosion and accelerated erosion on the unit is limited. The degree of erosion is indicated by the erosion classification tabulation in Table 2-3 with locations shown in Figure 2-8. The data were compiled from the information obtained from the Watershed Conservation and Development System Phase I Studies conducted by the BLM. These studies show the planning unit as a whole to be in good condition, with 34 percent stable, 51 percent slight, 12 percent moderate, 1 percent critical and 2 percent unclassified.

The planning unit can be divided into two distinct areas, with The Narrows as the dividing point (see Figure 2-7). The erosion condition of the lower area of the planning unit is due largely to physiographic conditions, over-grazing, and climate. The comparative erosion condition for this lower area



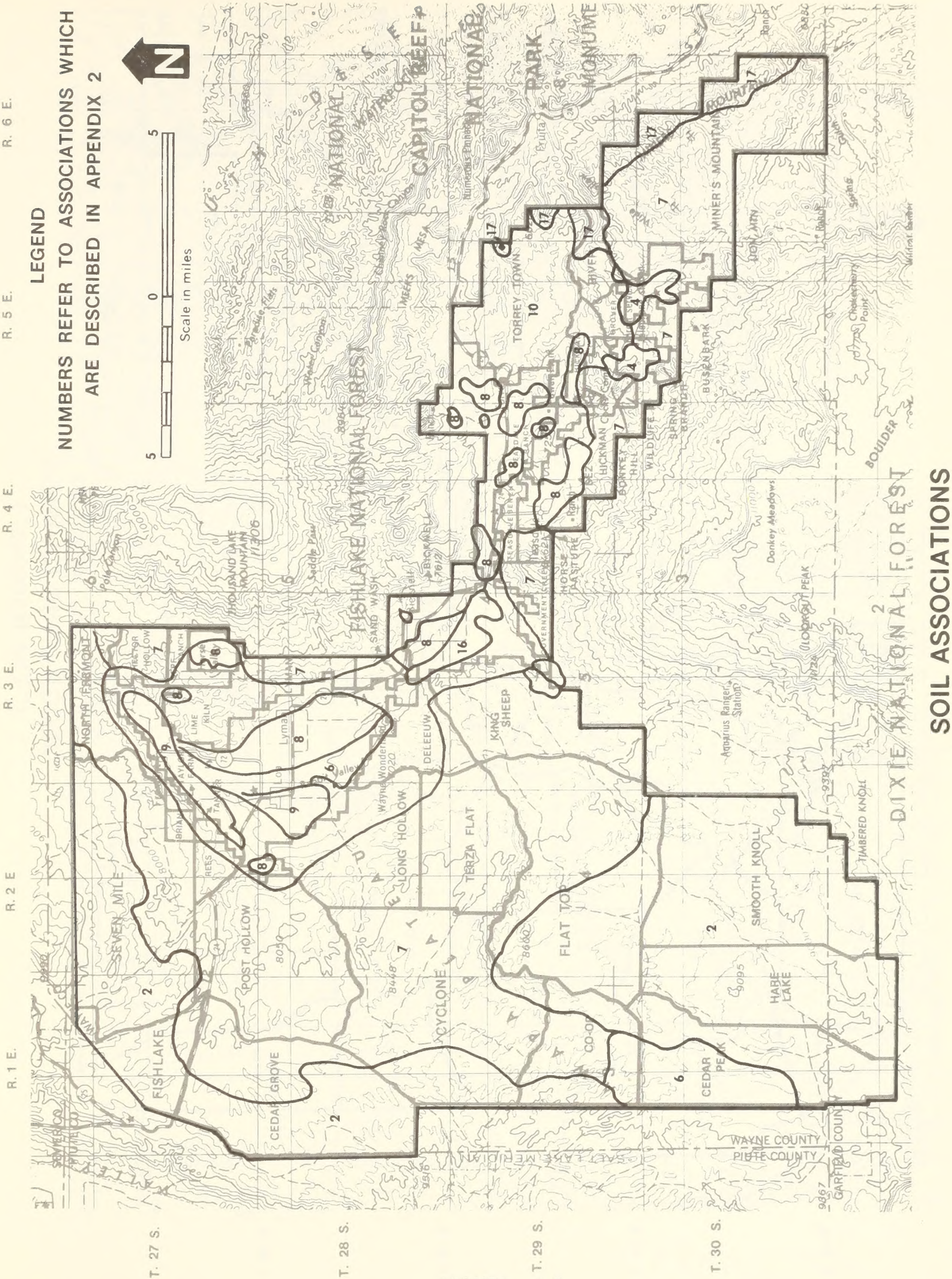
TOPOGRAPHIC FEATURES

FIGURE 2-4



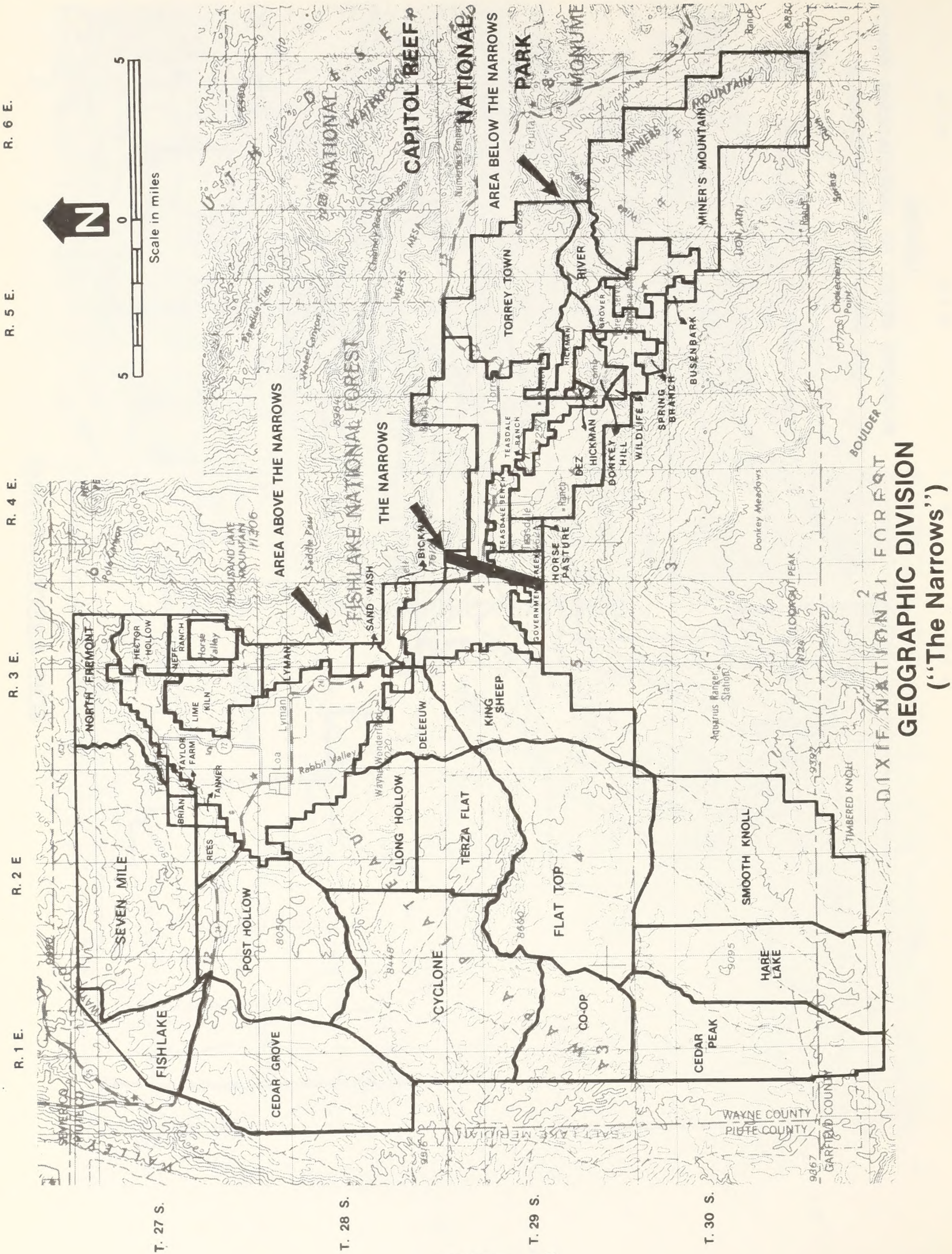
TOPOGRAPHIC PROFILES

FIGURE 2-5



SOIL ASSOCIATIONS

FIGURE 2-6



GEOGRAPHIC DIVISION
("The Narrows")

FIGURE 2-7

TABLE 2-3

Acres of Federal Land by Erosion Condition Class

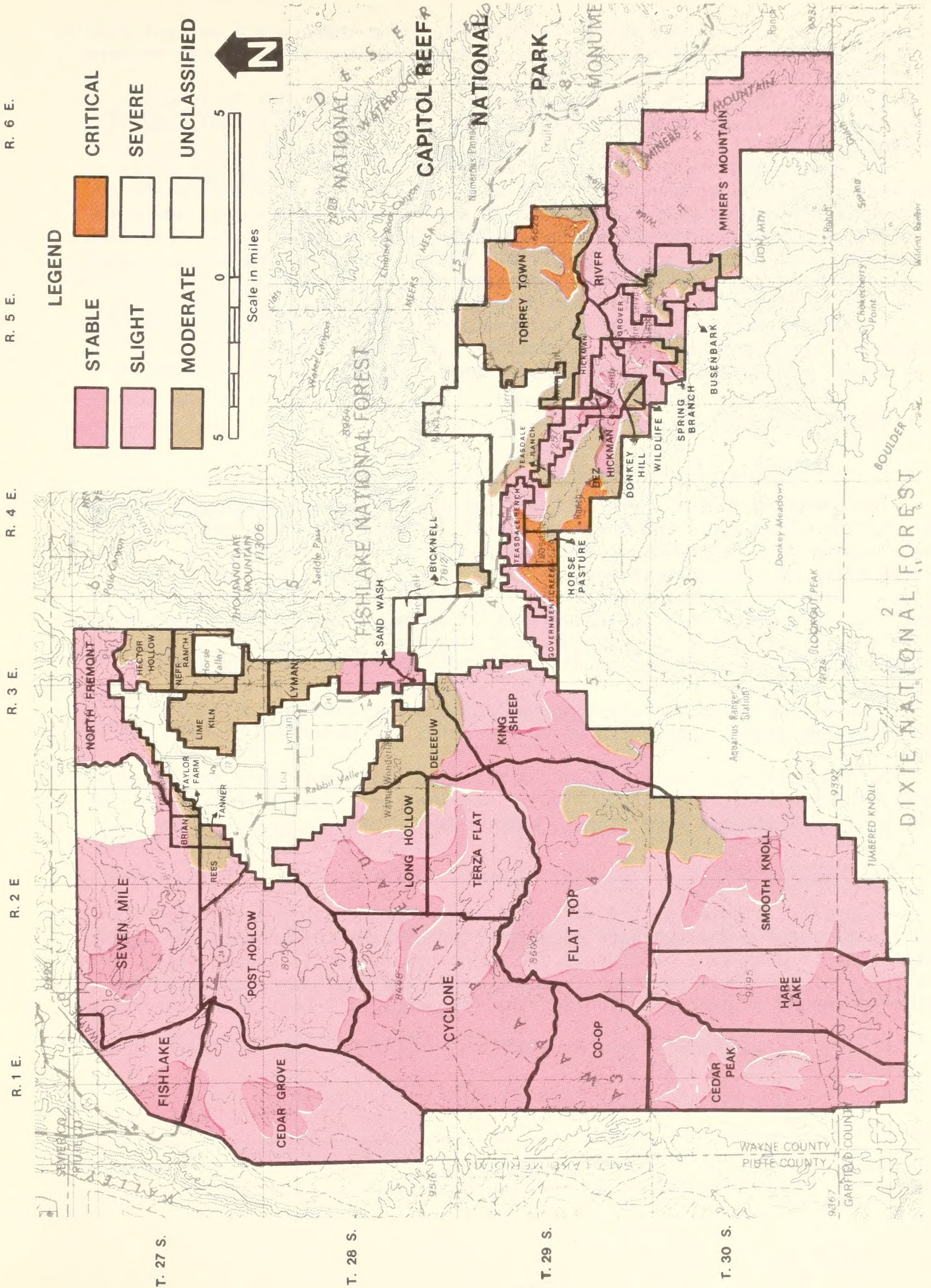
Allotment	Total	Stable	Slight	Moderate	Critical	Severe	Unclassified
NO LIVESTOCK GRAZING							
Dez Hickman	155		155				
Wildlife	320		320				
Subtotal	475		475				
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)							
Bicknell Spring	42,565	23,094	18,961	510			
Cedar Peak	12,351	9,641	2,710				
Hare Lake	11,453	9,363	2,090				
Smooth Knoll	18,761	4,090	14,161	510			
Bicknell Winter	28,597	15,927	8,940	3,730			
Flat Top	19,256	11,226	5,670	2,360			
King Sheep	9,341	4,701	3,270	1,370			
Cedar Grove	11,755	1,810	9,945				
Cyclone Co-op							
Co-op	7,160	7,160					
Cyclone	17,603	11,253	6,350				
Fishlake	2,880	1,400	1,480				
Hector Hollow	2,002	370	1,632				
Lyman	2,037			2,037			
Post Hollow	11,715	260	11,455				
Subtotal	126,314	61,274	58,763	6,277			
IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring)							
Seven Mile	21,159	1,250	15,709	1,490			2,710
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter)							
Bicknell	1,819	490	230	330			769
Lime Kiln	2,960			2,960			
Loa Winter							
Deleeuw	3,238	310		2,928			
Long Hollow	8,064	2,060	4,134	1,870			
Terza Flat	7,278	1,990	4,888	400			
Miners Mountain	15,683	120	15,003	560			
Neff Ranch	1,646			1,646			
North Fremont	3,351	3,351					
Sand Wash	778	778					
Torrey Town	9,477		230	6,907	1,950		390
Subtotal	54,294	9,099	24,485	17,601	1,950		1,159

TABLE 2-3 (concluded)

Allotment	Total	Stable	Slight	Moderate	Critical	Severe	Unclassified
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Winter)							
Busenbark	356		356				
Donkey Hill	1,367	200	987	180			
Government Creek	1,842		1,102		740		
Grover	1,582		1,192	390			
Horse Pasture	640			70	570		
River	2,029	80	1,929		20		
Spring Branch	492		492				
Teasdale Bench	1,200		940		260		
Teasdale Ranch	1,035		955				
Subtotal	10,543	280	7,953	720	1,590		
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter)							
Hickman	272		272				
Grand Total	213,057	71,903	107,657	26,088	3,540	0	3,869

Source: BLM Parker Mountain Planning Documents, 1978a.

DUMMY FIGURE 2-8



EROSION CONDITION CLASSES

FIGURE 2-8

is not as good as the area above The Narrows. Here there are 4 percent stable, 66 percent slight, 21 percent moderate, and 9 percent critical, with no acres in the severe or unclassified erosion class.

The upper portion of the planning unit above The Narrows is in good condition, with 36 percent classified as stable, 50 percent slight, and 14 percent moderate.

The area immediately adjacent to Rabbit Valley contains the majority of the area classified as moderate. This erosion condition is probably due to the area's close proximity to the populated portion of the valley, and the practice of livestock operators tending their herds close to home, resulting in holding of livestock too long near the valley, and in overgrazing. Erosion is also more advanced here due to the steepness of the slopes as the drainages leave the rolling plain country and drop somewhat abruptly into the valley.

Streambank erosion condition information is not available for most of the streams of the planning unit. Information for three streams, Fremont River, Pine Creek, and Road Creek, is shown on Table 2-4.

5. Water Resources

a. General

The planning unit is part of the Fremont River drainage, which is tributary to the Dirty Devil and Colorado Rivers. Figure 2-9 shows the relation of the planning unit to the Colorado River and Dirty Devil River Basin. There are 38 miles of streambank along the 11 streams that pass through federal lands. Table 2-5 shows streambank by allotment. Five streams are intermittent and yield water only during periods of spring snowmelt and summer thunderstorm activity. Most of the streams are diverted for irrigation or are impounded for culinary use and do not contribute water to the Fremont River throughout the year.

Figure 2-10 shows the planning unit's major streams and delineates 11 sub-watershed areas. Table 2-5 gives the acres and ownership of each sub-watershed.

No natural lakes occur within the planning unit, but there are 68 small reservoirs and several springs. Their locations are shown on Figure 2-11. The reservoirs may not have storage water every year.

b. Water Yield

Generally, single short-duration storms produce higher peak flows in small watersheds. The two-hour duration storm is the most common for small watersheds of Utah (SCS procedures for hydrology analysis, unpublished). The frequency of occurence is shown in Table 2-6. The SCS has calculated the expected amount of precipitation and the frequency of 2-hour storms as follows:

TABLE 2-4

Streambank in Planning Unit

Proposed Action Sub-component and Allotments	Public Land (Acres)	Stream	Miles of Streambank[a]			Relative condition based on ungulate damage and bank stability from best "1" to worst "5"[b]	Perennial - P Intermittent - I
			Public Land	Private Land	State Land		
NO LIVESTOCK GRAZING							
Dez Hickman	155	Donkey Cr.	0.4	0	0	[c]	I
Subtotal			0.4	0	0		
CONTINUE EXISTING CONTINUOUS-SEAONAL GRAZING (Spring, Fall, Winter)							
King Sheep	9,341	Pine Cr.	4.0	0	0	5	P
Post Hollow	11,715	Riley Cyn.	2.5	0	0.5	1	P
Subtotal			6.5	0	0.5		
CONTINUE WITH CONTINUOUS-SEAONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter)							
Deleeuw	3,238	Fremont Riv.	2.0	0	0	2	P
Long Hollow	8,064	Road Cr.	0.5	0	0	5	P
Miner's Mt.	15,683	Sulphur Cr.	4.5	0	0	[c]	P
North Fremont	3,351	Fremont Riv.	3.0	0	0	2	P
Sand Wash	778	Sand Creek	1.0	0	0	[c]	P
Torrey Town	9,477	Sulphur Cr.	7.0	1	0	[c]	P
Subtotal			18.0	1	0		
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Winter)							
Donkey Hill	1,367	Fish Creek	0.3	0	0	[c]	P
Government Cr.	1,842	Government Cr.	1.0	0	0	[c]	I
Grover	1,582	Fish Creek	0.3	0	0	[c]	P
Horse Pasture	640	Bullberry Cr.	1.0	0	0	[c]	I
River	2,029	Fremont Riv.	8.5	0	0	3	P
Spring Branch	492	Fish Creek	0.5	0	0	[c]	P
Teasdale Bench	1,200	Birch Cr.	0.2	0	0	[c]	I
Teadale Ranch	1,035	Donkey Cr.	0.6	0	0	[c]	I
Subtotal			12.40				

TABLE 2-4 (concluded)

Proposed Action Sub-component and Allotments	Public Land (Acres)	Stream	Miles of Streambank[a]			Relative condition based on ungulate damage and bank stability from best "1" to worst "5"[b]	Perennial - P Intermittent - I
			Public Land	Private Land	State Land		
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter)							
Hickman	272	Fremont Riv.	2.0	0	0	2	P
		Fish Cr.	0.6	0.4	0	[c]	P
Subtotal			2.6	0.4			
GRAND TOTAL			39.9	1.4	0.5		

Source: BLM Parker Mountain Planning Documents, 1978a.

Notes: [a]Miles of stream bank are for steams crossing land within grazing allotments in the planning unit. Two miles of streambank are listed for each linear mile of stream.

[b]1. Bank completely stable--no evidence of soil erosion, no damage from animals--no evidence of grazing.

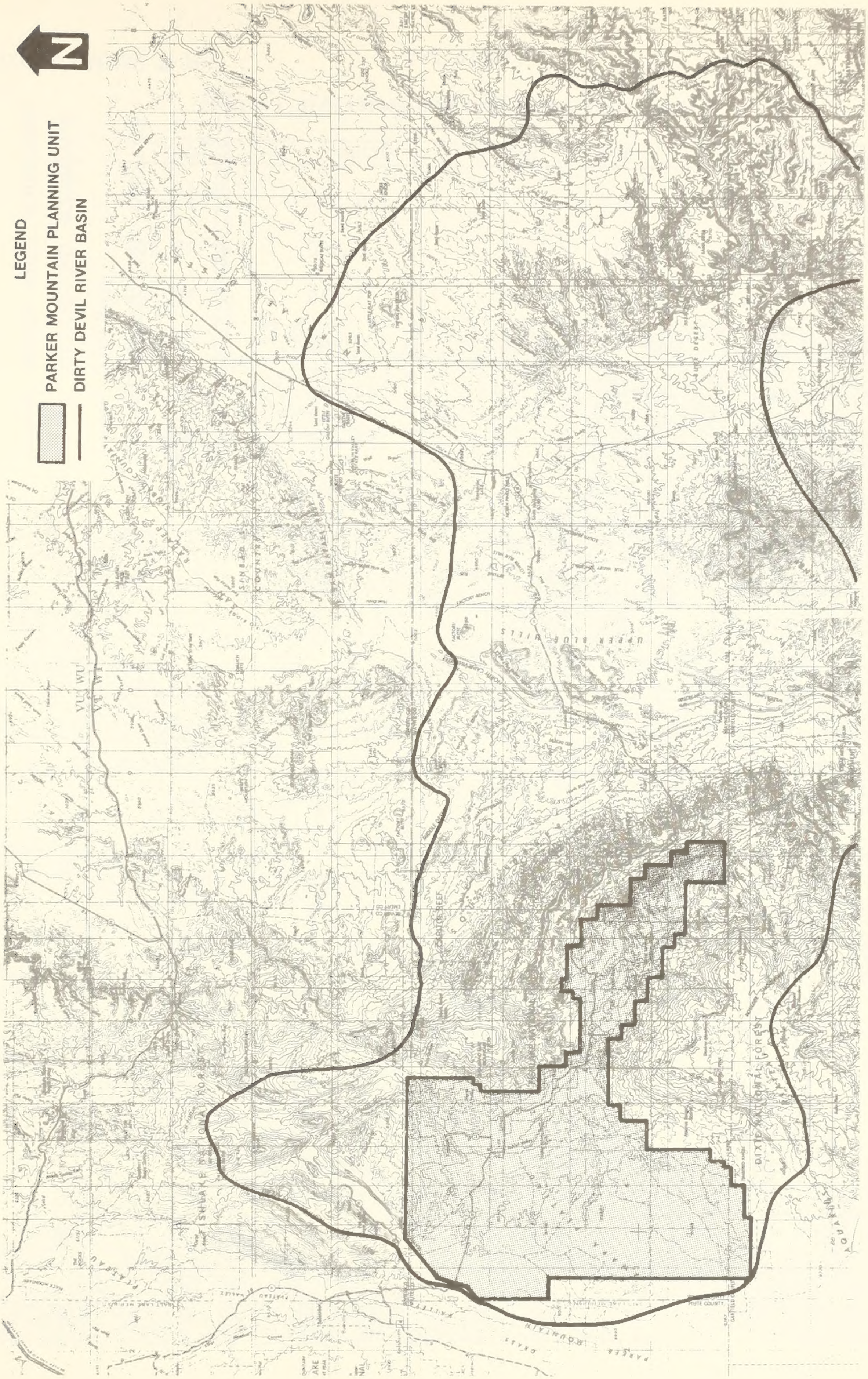
2. Banks mostly stable--slight sign of erosion--occasional damage to banks by a hoofed animal--grazing may be less than 20 percent.

3. Banks show signs of caving--some erosion evident--animal trampling is evident--light to moderate grazing evident (20 to 40 percent).

4. Banks actively deteriorating--erosion noticeable--many animal trails into creek--damage from hoof animals easily seen--grazing moderate to heavy (40 to 60 percent).

5. Bank very unstable--caving into stream-- active soil erosion--evidence of heavy animal trampling damage--heavy grazing (greater than 60 percent).

[c]No information.



RELATIONSHIP OF THE PARKER MOUNTAIN PLANNING UNIT
TO THE DIRTY DEVIL RIVER BASIN
AND THE COLORADO RIVER

FIGURE 2-9

TABLE 2-5

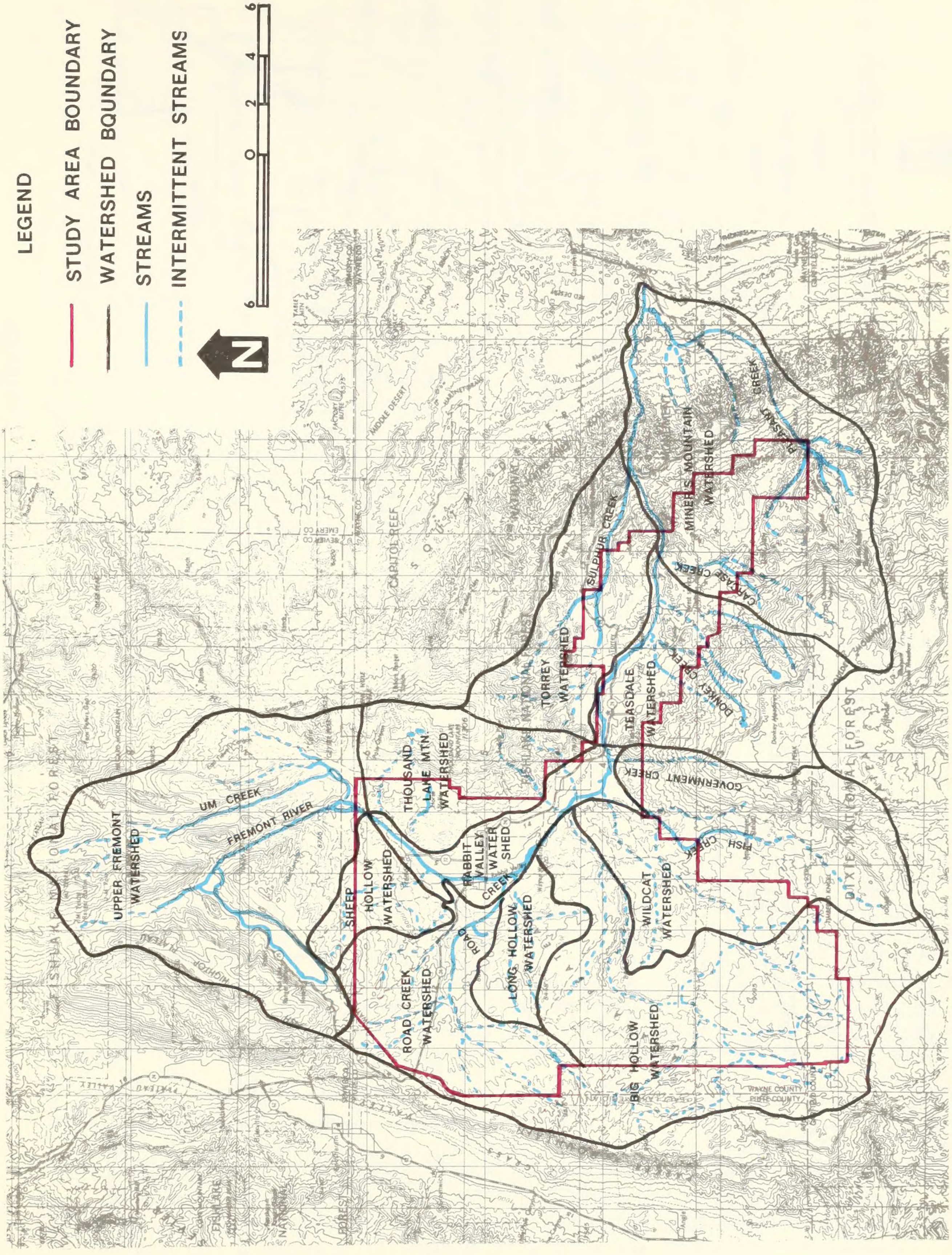
Watershed Areas and BLM Ownership (acres)

Watershed	BLM	BLM %	Other	Total
Upper Fremont	860	1	130,340	131,200
Sheep Hollow	11,340	69	5,060	16,400
Long Hollow	15,530	93	1,110	16,640
Road Creek	48,090	85	7,990	56,080
Big Hollow	73,390	62	44,930	118,320
Thousand Lake	12,430	33	24,690	37,120
Wildcat-Pine Cr.	35,180	45	43,380	78,560
Rabbit Valley	1,830	9	19,410	21,240
Teasdale	10,180	18	44,940	55,120
Torrey	21,100	45	26,100	47,200
Miners Mountain	23,060	21	87,980	111,040
Total	252,990[a]	37	435,930	688,920

Source: Christensen, 1979.

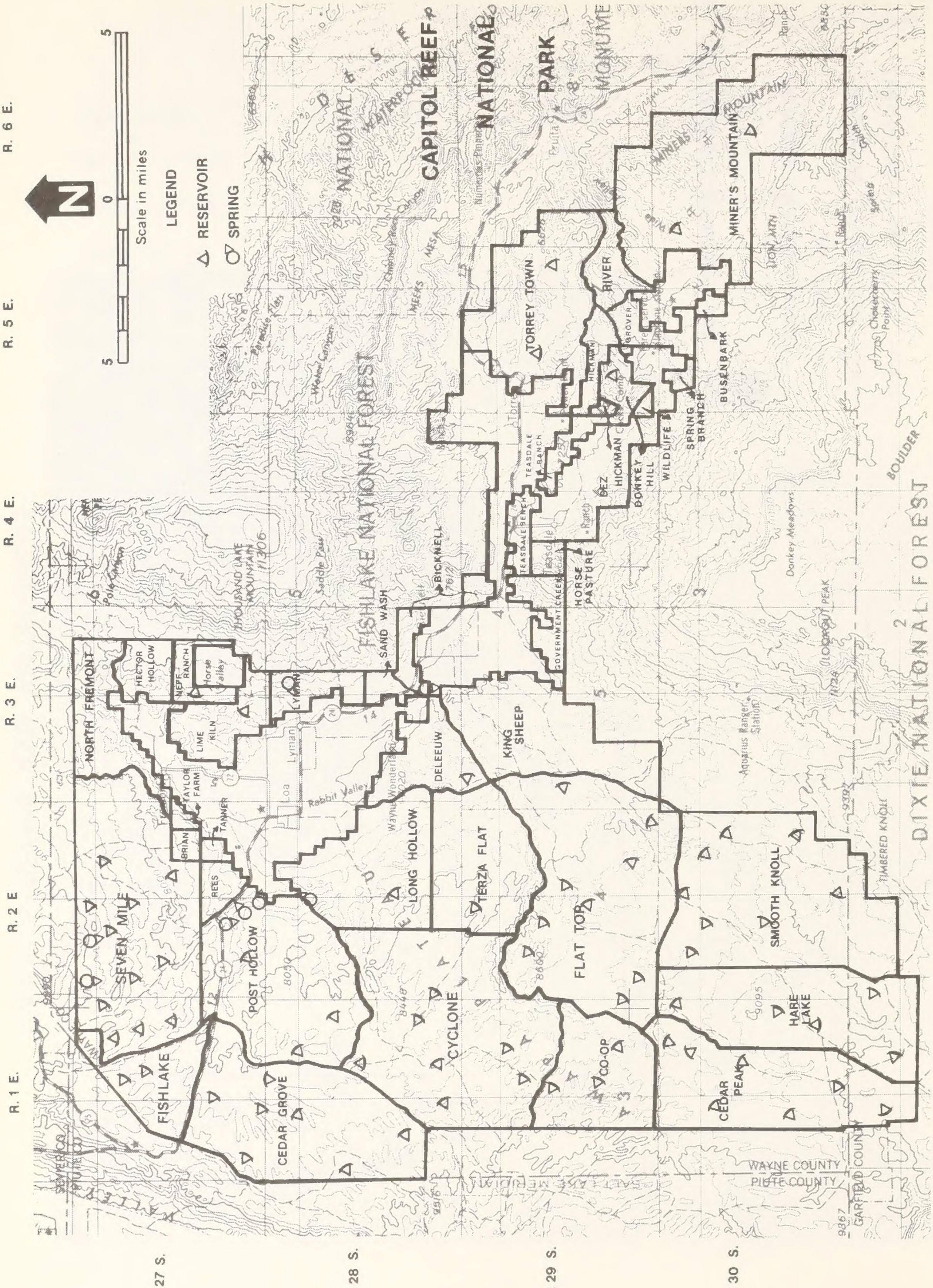
Note: [a] This figure represents all public land within the watershed and includes public land outside the Parker Mountain Planning Unit.

DUMMY FIGURE 2-10



MAJOR STREAMS AND WATERSHEDS

FIGURE 2-10



RETENTION RESERVOIRS AND SPRINGS

FIGURE 2-11

TABLE 2-6

Two-Hour Storm Frequency

Frequency (years)	Precipitation in Inches	Chance of Occurrence In Any One Year (percent)
100	1.7	1
50	1.5	2
25	1.3	4
10	1.1	10
5	0.9	20
2	0.6	50

The water yield from a single 2-hour 10-year frequency storm is shown in Table 2-7 for each separate component of the proposal. Appendix II-5 shows how this runoff was determined. The total water yield of a 2-hour 10-year frequency storm covering the entire planning unit is about 2,747 acre-feet.

There are insufficient data to show actual annual water yield from the entire planning unit. Totals were estimated for all 11 watersheds using yield maps prepared by the Utah Water Lab at Utah State University; Figure 2-12 shows yield from these watersheds. The results are summarized in Table 2-8, which indicates that a total of 116,614 acre-feet is produced each year from all the watersheds.

An estimate of the average annual water yield from within the planning unit itself was estimated to be 10,939 acre-feet, as shown in Table 2-9. Thus only about 9 percent of the total watershed water yield is from lands within the planning unit. Present consumptive use by livestock is 2,485,500 gallons on 7.63 acre-feet per year (i.e., 8,285 AUMs X 300 gallons [Stoddard and Smith, 1955]).

c. Water Quality

Water-quality data for surface waters in the planning unit are lacking, with the exception of one U.S. Geological Survey (USGS) station near Bicknell, where measurements of water quality have been obtained for the Fremont River. Water from the planning unit makes up less than 10 percent of the water in the Fremont River and percentage of contribution to the pollutants is not known. The Fremont River is classified 1c (domestic), 3A (for aquatic wildlife), and 4 (agriculture). Standards for domestic use are the most demanding of the three classifications and are shown on Table 2-10. Data in the table indicate that, at the time of sampling, there was evidence of organic enrichment and coliform levels were elevated. Nonpoint sources appear to be the major cause of water-quality deterioration.

6. Vegetation

a. Vegetation Types and Subtypes

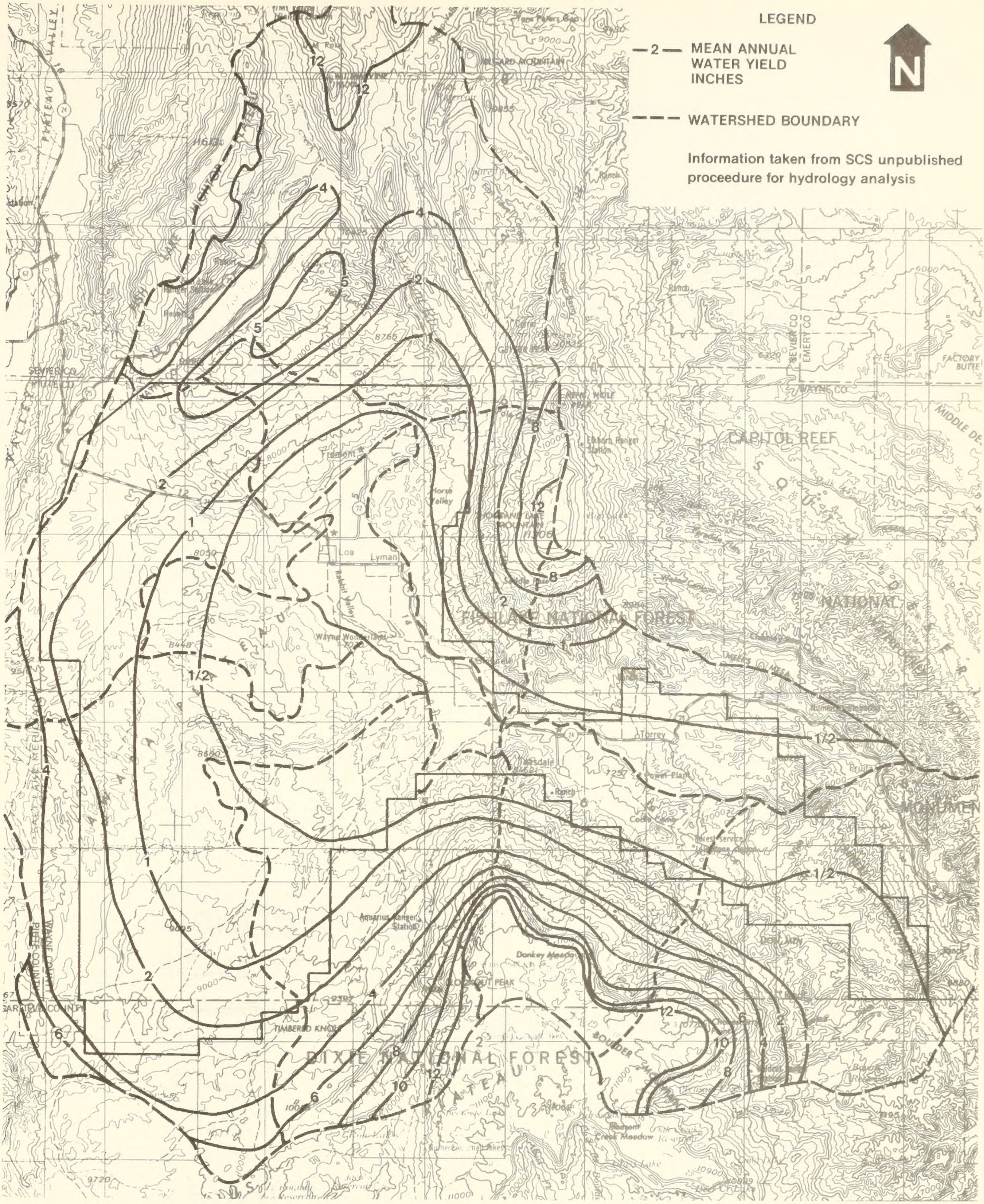
The Parker Mountain Planning Unit has seven major vegetation types. Three of the major types are further divided into eight subtypes as described in Table 2-11. Figures 2-13 through 2-18 show six representative types. Table 2-12 lists each type's acreage on the public land in the allotments. Figure 2-19 shows the distribution of the types and subtypes.

TABLE 2-7

Short Duration 2-Hour 10-Year Frequency Storm Runoff

	Weighted	Hydrologic	Herbaceious			Sage-Grass			Juniper-Grass			Oak-Aspen Grass			Water Runoff	
Proposal Componant	Average Vegetation Density	Soil Group	Acres	RCN	Acre-inches	Acres	RCN	Acre-inches	Acres	RCN	Acre-inches	Acres	RCN	Acre-inches	Total Acre-inches	Total Acre-ft
No Livestock Grazing	21	B	--	--	--	320	62	0	155	69	0	--	--	--	--	--
Subtotal			--	--	--	320	--	0	155	--	0	--	--	--	--	--
Continue Existing Continuous-Seasonal Grazing (Spring, Fall, Winter)	16	B	9,554	80	955	70,782	66	0	3,948	74	158	131	70	0		
	16	C	18,921	87	5,298	33,966	80	3,396	1,647	86	395					
Subtotal			28,475	--	6,253	104,748	--	3,396	5,595	--	553	131	--	0	10,202	850
Implement Two-Pasture Rest-Seasonal Grazing and Consolidation of Allotments (Spring)	28	B	10,000	76	600	7,733	61	0	--	--	--	--	--	--	--	--
	28	C	3,500	84	630	1,200	74	48								
Subtotal			13,500		1,230	8,933	--	48							1,278	107
Continue With Continuous-Seasonal Grazing With Adjustment of Grazing Allocation (Winter)	14	B	2,167	80	217	8,434	67	0	10,365	75	513					
	14	C	2,875	87	805	14,021	81	1,682	1,061	86	255					
	14	D	1,150	94	736			0	21,160	96	16,082					
Subtotal			6,192	--	1,758	22,455	--	1,682	32,586	--	16,850				20,290	1,691
Continue With Continuous-Seasonal Grazing Adjusted by Utilization (Winter)	13	B	1,474	81	177	2,510	68	0	5,877	76	353					
		D	162	94	104	160	92	83	600	96	456					
Subtotal			1,636	--	281	2,670	--	83	6,477	--	809				1,173	98
Continue With Continuous-Seasonal Grazing With Adjustment of Season (Winter	9	B				60	70	0	212	78	17					
Subtotal						60	--	0	212	--	17				17	1
Grand Total			49,803		9,522	139,186		5,209	45,025		18,229	131		0	32,960	2,747

Source: Christensen, 1979.



ANNUAL WATER YIELD

FIGURE 2-12

TABLE 2-8

Estimated Annual Water Yield by Watershed

Watershed	Estimated Annual Yield (acre-feet)
Upper Fremont	27,430
Sheep Hollow	1,600
Road Creek	5,200
Long Hollow	300
Big Hollow	20,600
Wildcat-Pine Creek	18,400
Rabbit Valley	0
Thousand Lake	6,100
Teasdale	18,100
Torrey	1,500
Miner's Mountain	15,000
	114,230

Source: Christensen, 1979.

TABLE 2-9

Estimated Annual Water Yield
By Proposed Action Sub-Component and Allotment

Proposed Action Sub-Component and Allotment(s)	Estimated Annual Yield (acre-feet)
NO LIVESTOCK GRAZING	
Dez Hickman	0
Wildlife	0
Subtotal	0
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Bicknell Spring	
Cedar Peak	1,857
Hare Lake	1,294
Smooth Knoll	1,265
Bicknell Winter	
Flat Top	47
King Sheep	25
Cedar Grove	1,660
Cyclone Co-op	
Co-op	626
Cyolone	868
Fishlake	636
Hector Hollow	40
Lyman	0
Post Hollow	597
Subtotal	8,915
IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring)	
Seven Mile	1,760
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter)	
Bicknell	12
Lime Kiln	0
Loa Winter	
Deleeuw	0
Long Hollow	0
Terza Flat	0
Miner's Mountain	46
Neff Ranch	59

TABLE 2-9 (concluded)

Proposed Action Sub-Component and Allotment(s)	Estimated Annual Yield (acre-feet)
CONTINUE WITH CONTINUOUS-SEAONAL WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter) (continued)	
North Fremont	87
Sand Wash	0
Torrey Town	33
Subtotal	237
CONTINUE WITH CONTINUOUS-SEAONAL GRAZING ADJUSTED BY UTILIZATION (Winter)	
Busenbark	15
Donkey Hill	0
Government Creek	0
Grover	0
Horse Pasture	0
River	0
Spring Branch	12
Teasdale Bench	0
Teasdale Ranch	0
Subtotal	27
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter)	
Hickman	0
TOTAL	10,939

Source: Christensen, 1979.

TABLE 2-10

Water Quality Measurements
Fremont River Near Bicknell and State Standards

	Concentrations mg/ℓ			
Constituent	Actual Measurement (1/20/77)	Domestic Source (1C)	Aquatic Wildlife (3A)	Agriculture (4)
Bacteriological (No./100 ml)				
(monthly Geometric Mean)				
Maximum Total Coliforms	3,900	5,000	*	*
Maximum Fecal Coliforms	150	2,000	*	*
Physical				
Total Dissolved Gasses	9.1	*	(d)	*
Minimum DO (mg/ℓ)		5.5	6.0	*
Maximum Temperature		*	20°C	*
Maximum Temperature Change		*	2°C	*
pH		6.5-9.0	6.5-9.0	*
Chemical (Maximum mg/ℓ)				
Arsenic	.003	.05	*	.1
Barium		1	*	*
Cadmium		.010	.0004(a)	.01
Chromium		.05	.10	.10
Copper		*	.01	.2
Cyanide		*	.005	*
Iron	.64	*	1.0	*
Lead		.05	.05	.1
Mercury		.002	.00005	*
Phenol		*	.01	*
Selenium		.01	.05	.05
Silver		.05	.01	*
Zinc	0.005	*	.05	*
NH_3 as N (un-ionized)		*	.02	*
Chlorine		*	.002	*
Floride (b)		1.4-2.4	*	*
NO_3 as N		10	*	*
Boron	.1	*	*	.75
H_2S		*	.002	*
TDS	336	*	*	2500
Radiological (Maximum pCi/ℓ)				
Gross Alpha		15	15(c)	15(c)
Radium 226, 228 comb.		5	*	*
Strontium 90		8	*	*
Tritium		20,000	*	*

TABLE 2-10 (concluded)

Constituent	Concentrations mg/ℓ Actual Measurement (1/20/77)	Domestic Source (1C)	Aquatic Wildlife (3A)	Agriculture (4)
Pesticides (Maximum μg/ℓ)				
Endrin		.2	.004	*
Lindane		4	.01	*
Methoxychlor		100	.03	*
Toxaphene		5	.005	*
2, 4-D		100	*	*
2,4,5-TP		10	*	*
Pollution Indicators (c)				
Gross Beta (pCi/ℓ)		50	50	50
BOD (mg/ℓ)	1.80	5	5	5
NO_3 as N (mg/ℓ)		*	4	*
PO_4 as P (mg/ℓ)	0.13	*	.025	*

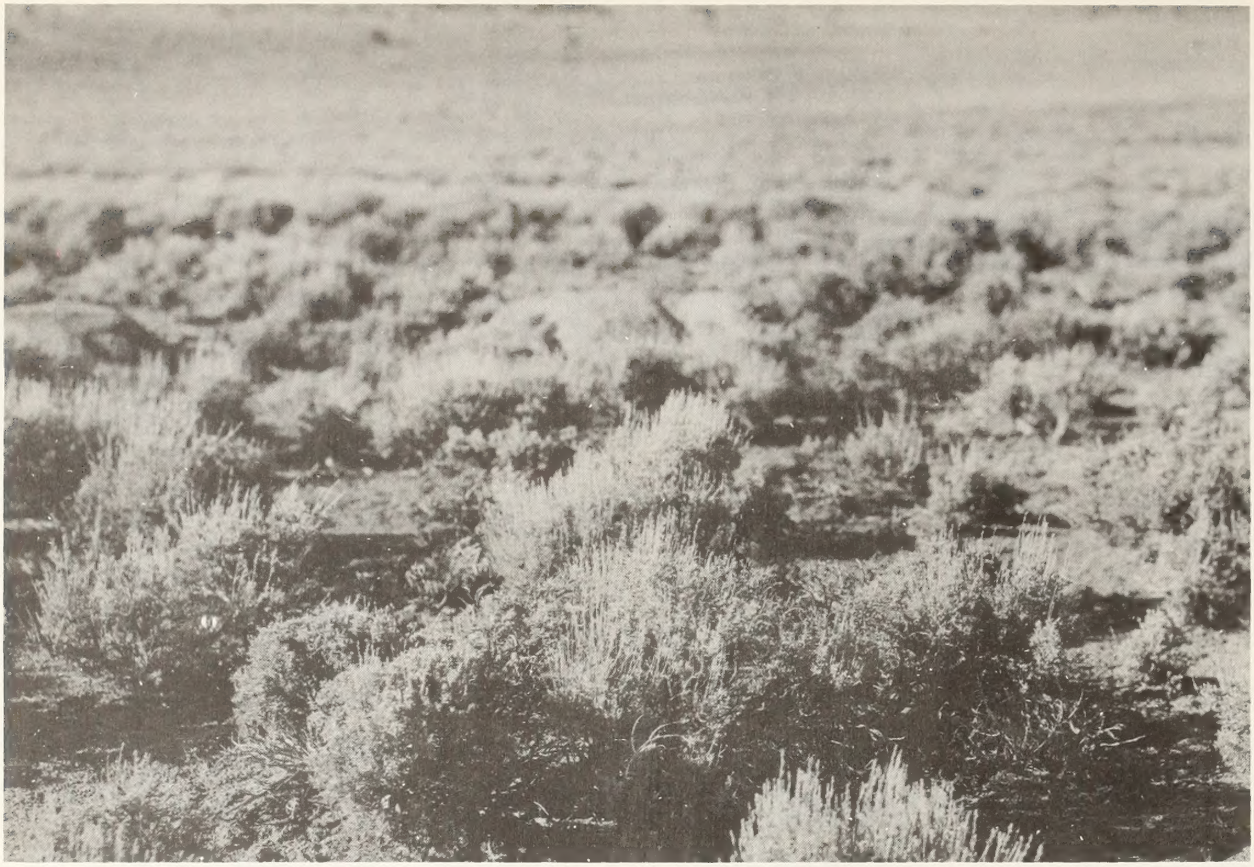
Source: Utah State Division of Health, 1978.

TABLE 2-11

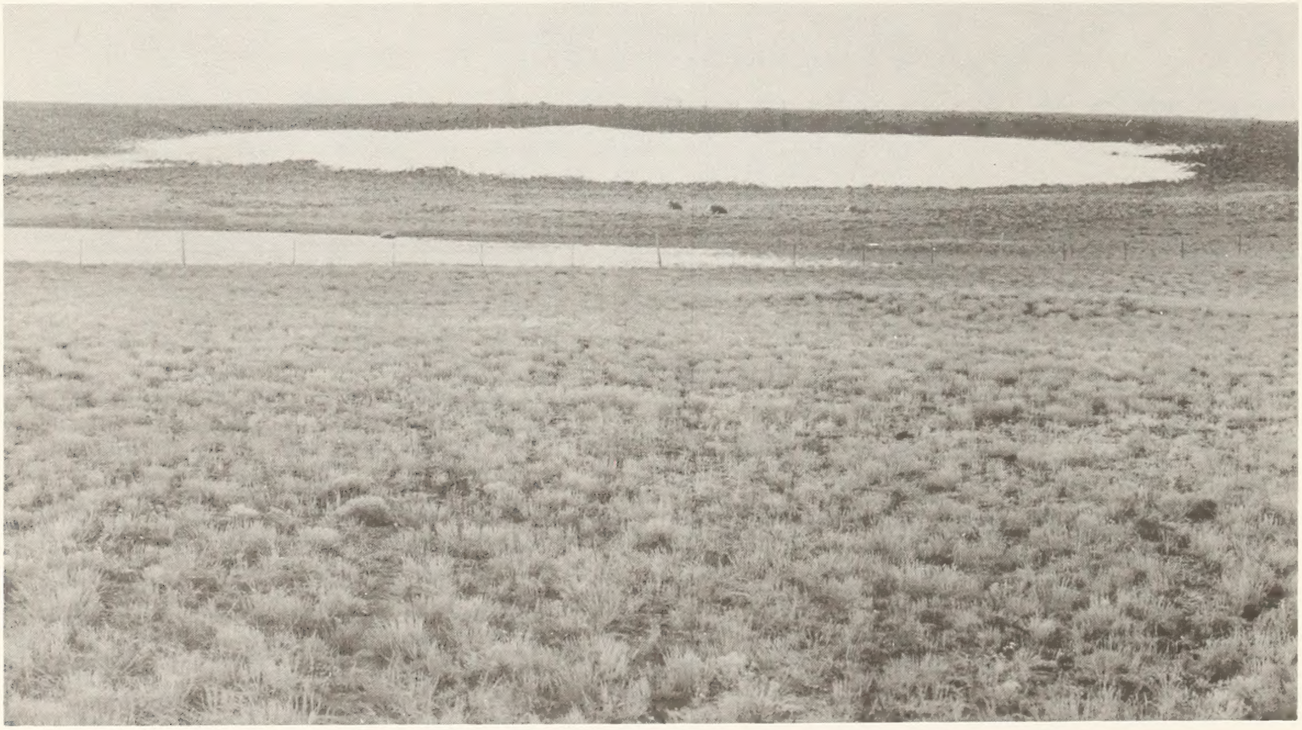
Description of Vegetation Types in the Planning Unit

Vegetation Types and Subtypes	Percent of Planning Unit	General Location and Soils	Associated Species
Sagebrush Big Sagebrush Black Sagebrush Rabbitbrush Snakeweed	64.3	Most common in valley bottoms, plateaus and benches. Soils vary from shallow rocky soils on hillsides and ridges to deep, well-drained soils on valley bottoms.	Antelope bitterbrush, rabbitbrush, mountain mahogany, blue grama, western wheatgrass, bluebunch wheatgrass, Indian ricegrass, squirreltail, bluegrasses, needlegrasses, phloxes, asters, buckwheats, bluebells, lupines, and pussytoes. (1,500 acres sprayed in the Seven Mile Allotment in __.)
Pinyon-Juniper Pinyon Juniper	21.0	Generally located on moderately to steeply sloping uplands with shallow rocky soils.	Utah juniper, Rocky Mountain juniper, pinyon pine, big sagebrush, black sagebrush, mountain mahogany, snowberry, chokecherry, blue grama, cheatgrass, wheatgrasses, Indian ricegrass, bluegrasses, needlegrasses, squirreltail, asters, phlox, lupines, and buckwheat. (1,200 acres chained and seeded on Miner's Mountain in 1968-69.)
Grass Short-grass Mid-grass	13.3	Most common on plateaus and benches. Soils vary from shallow rocky soils on hillsides and ridges to moderately sloping uplands with deeper soils.	Blue grama, Indian ricegrass, blue grasses, needlegrasses, wheatgrasses, big sagebrush, lupines, phlox, and asters.
Annuals	<1	On low benches with fairly shallow soils.	Russian thistle, goosefoot, big sagebrush, rabbitbrush, blue grama, needle-and-thread grass.
Aspen	<1	Occupies north exposures at the higher elevations on moderately deep soils.	Snowberry, serviceberry, bromegrasses, needlegrasses, wheatgrasses, bluegrasses, and several forb species.
Waste	<1	Terrain that is so rough or inaccessable as to make livestock use impossible.	
Riparian Vegetation	<1	A vegetation association which occurs typically along rivers and streams and around springs and seeps. Plant species composition for any riparian situation in the mountain west would be very similar.	Cottonwood, river birch, alder, willows, woods rose, sedges, rushes, horsetail, etc.

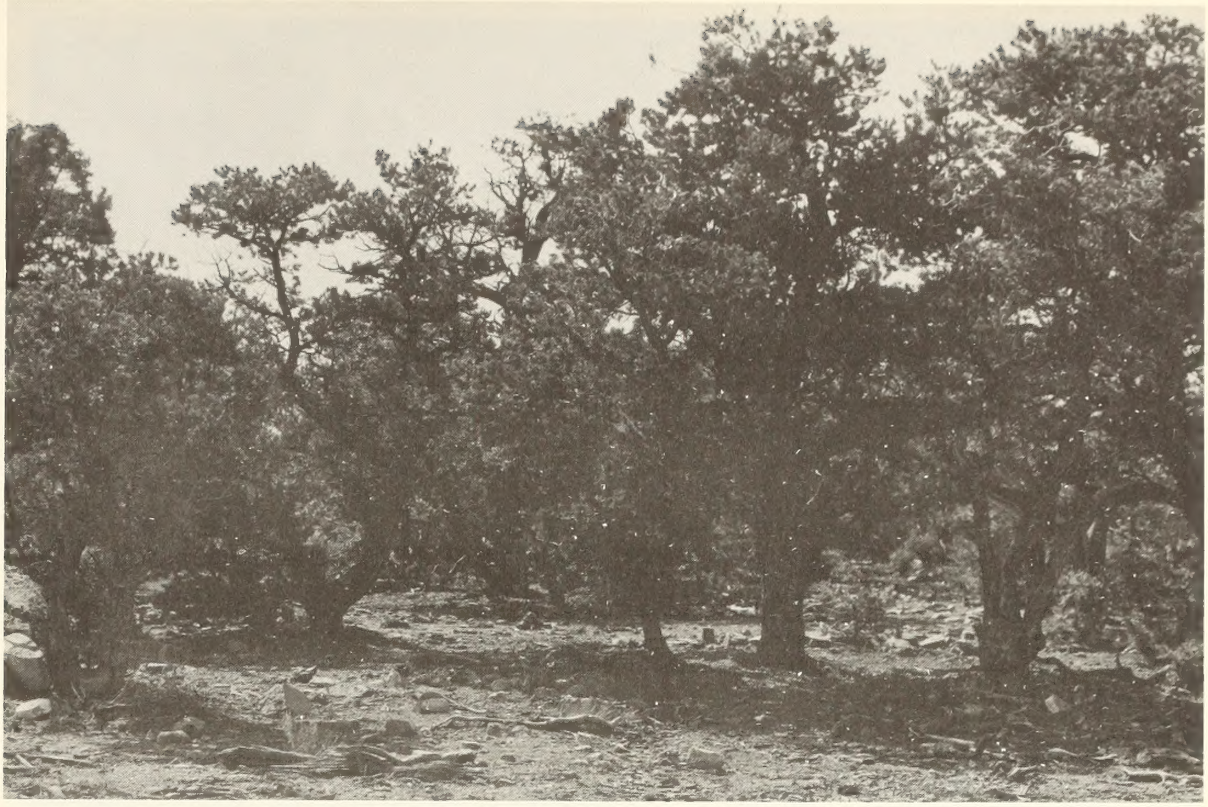
Source: BLM Parker Mountain Planning Documents, 1978a.



BIG SAGEBRUSH TYPE
POST HOLLOW ALLOTMENT - NEAR HIGHWAY 24
FIGURE 2-13

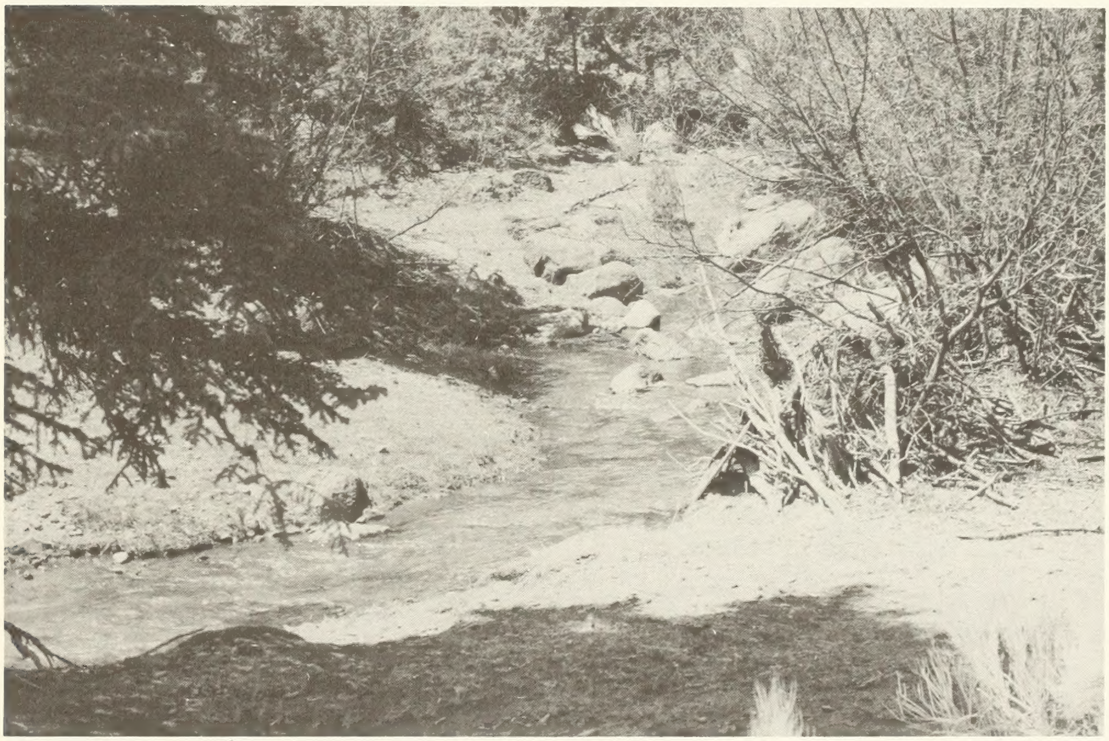


BLACK SAGEBRUSH TYPE
AWAPA PLATEAU - NEAR DRY LAKE
FIGURE 2-14



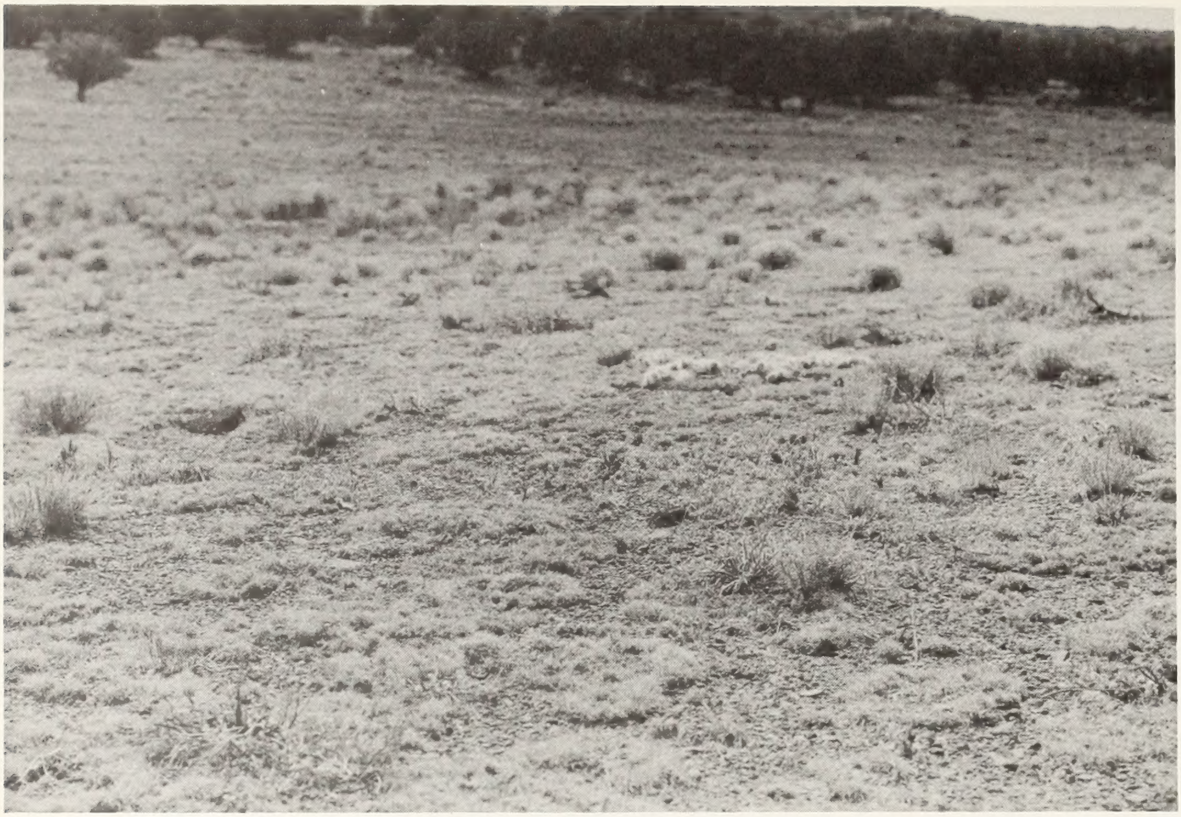
PINYON JUNIPER TYPE
MINER'S MOUNTAIN AREA

FIGURE 2-15

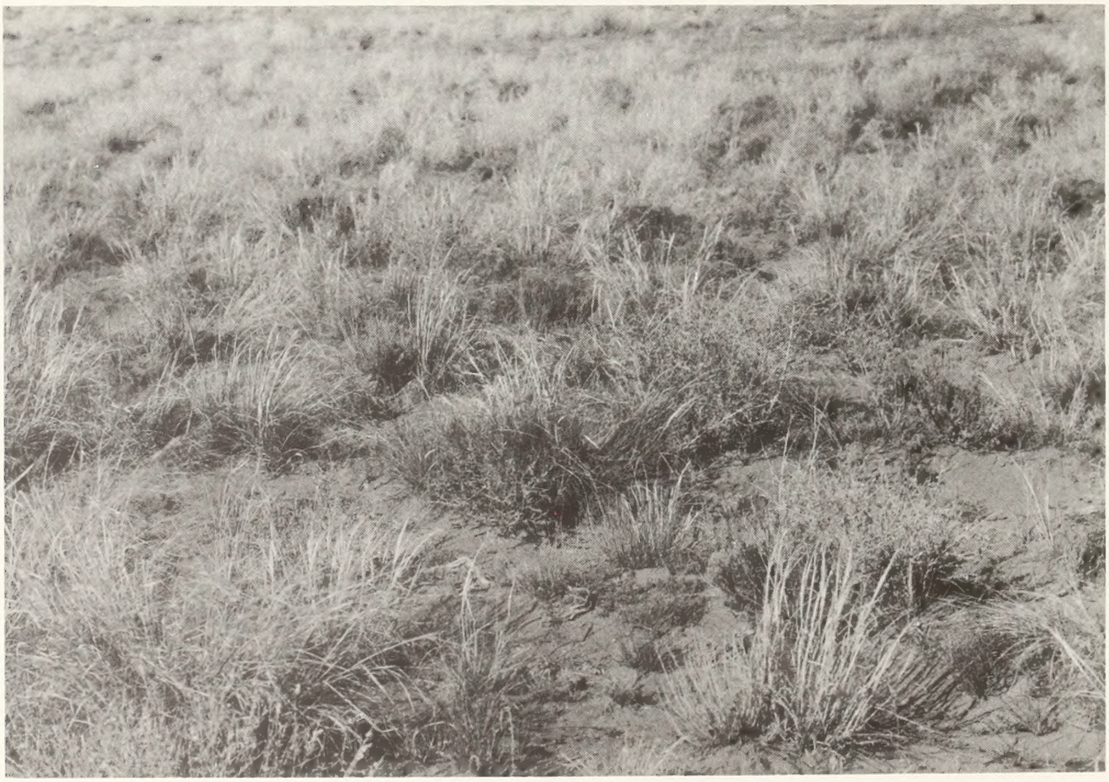


RIPARIAN VEGETATION
PINE CREEK - AWAPA PLATEAU

FIGURE 2-16



SHORT GRASS TYPE
KING SHEEP ALLOTMENT AWAPA PLATEAU
FIGURE 2-17



MIDGRASS TYPE
NEAR "THE NARROWS" RABBIT VALLEY
FIGURE 2-18

TABLE 2-12

Distribution of Vegetation Types

Proposed Action Sub-Component and Allotments	Public Land Acres in Allotment	Acres of Type in Allotments												
		Sagebrush				Grass		Pinyon-Juniper			Broad-Leaf Trees	Annuals	Waste	Riparian
		Big Sagebrush	Black Sagebrush	Rabbit-brush	Snake weed	Short grass	Midgrass	Pinyon-Juniper	Juniper	Pinyon	Aspen			
NO LIVESTOCK GRAZING														
Dez Hickman	155							155						
Wildlife	320	40						168					112	
Subtotal	475	40						323					112	
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)														
Bicknell Spring	n/a[a]													
Cedar Peak	12,351	165	11,690				496							
Hare Lake	11,453	864	10,589											
Smooth Knoll	18,761	141	16,427	372			1,690				131			
Bicknell Winter	n/a[a]													
Flat Top	19,256		8,992	1,153		8,784		327						
King Sheep	9,341	1,127		113		6,343		1,747						11
Cedar Grove	11,755	2,868	5,369	3,518										
Cyclone Co-op	n/a[a]													
Co-op	7,160		6,336	824										
Cyclone	17,603	3,383	10,760	2,882		139		439						
Fishlake	2,880	2,880												
Hector Hollow[b]	2,002	1,082						920						
Lyman[b]	2,037			260	49	296		1,432						
Post Hollow	11,715	11,262	10	60				373						10
Subtotal	126,314	23,772	70,173	9,182	49	15,562	2,186	5,238			131			21
IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING SYSTEM AND CONSOLIDATION OF ALLOTMENTS														
Seven Mile	21,159	7,805	4,136			1,270		7,136			812			
Subtotal	21,159	7,805	4,136			1,270		7,136			812			

TABLE 2-12 (continued)

Proposed Action Sub-Component and Allotments	Public Land Acres in Allotment	Acres of Type in Allotments: Sagebrush: Big Sagebrush	Sagebrush: Black Sagebrush	Sagebrush: Rabbit-brush	Sagebrush: Snake weed	Grass: Short grass	Grass: Midgrass	Pinyon-Juniper: Pinyon-Juniper	Pinyon-Juniper: Juniper	Pinyon-Juniper: Pinyon	Broad-Leaf Trees: Aspen	Annuals	Waste	Riparian
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter)														
Bicknell	1,819			193		211		928				487		
Lime Kiln[b]	2,960	216			54	2,299		391						
Loa Winter	n/a[a]													
Deleeuw	3,238	2,270		302								666		
Long Hollow	8,064	2,912		4,040		654		456						2
Terza Flat	7,278	1,769	308	2,375		2,221		308				297		
Miner's Mountain[b]	15,683								1,200	14,483				
Neff Ranch[b]	1,646	603						1,043						
North Fremont	3,351	2,417						922						12
Sand Wash[b]	778			778										
Torrey Town[b]	9,477							9,477						
Subtotal	54,294	10,187	308	7,688	54	5,385		13,525	1,200	14,483		1,450		14
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Winter)														
Busenbark	356							356						
Donkey Hill	1,367	11		231				846					279	
Government Creek	1,842			891		180		771						
Grover	1,582	263		66		9		1,244						
Horse Pasture	640			73		21		546						
River	2,029	199		158		18		1,240					391	23
Spring Branch	492	354						138						
Teasdale Bench	1,200			379		627		176					18	
Teasdale Ranch	1,035			233		149		653						
Subtotal	10,543	827		2,031		1,004		5,970					688	23

TABLE 2-12 (concluded)

Proposed Action Sub-Component and Allotments	Public Land Acres in Allotment	Acres of Type in Allotments												
		Sagebrush				Grass		Pinyon-Juniper			Broad-Leaf Trees	Annuals	Waste	Riparian
		Big Sagebrush	Black Sagebrush	Rabbit-brush	Snake weed	Short grass	Midgrass	Pinyon-Juniper	Juniper	Pinyon	Aspen			
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter)														
Hickman	272	51						212						9
Subtotal	272	51						212						9
GRAND TOTAL	213,057	62,682	74,617	18,901	103	23,221	2,186	32,404	1,200	14,483	943	1,450	800	67

Source: BLM Range Inventories, 1956-57 and 1975-76.

Notes: [a] n/a = Not applicable, as information for these allotments is included in the sub-allotments listed thereunder.

[b] Allotment types and subtypes are determined from the 1975-76 range survey; others are from the 1956-57 range survey.

DUMMY FIGURE 2-19

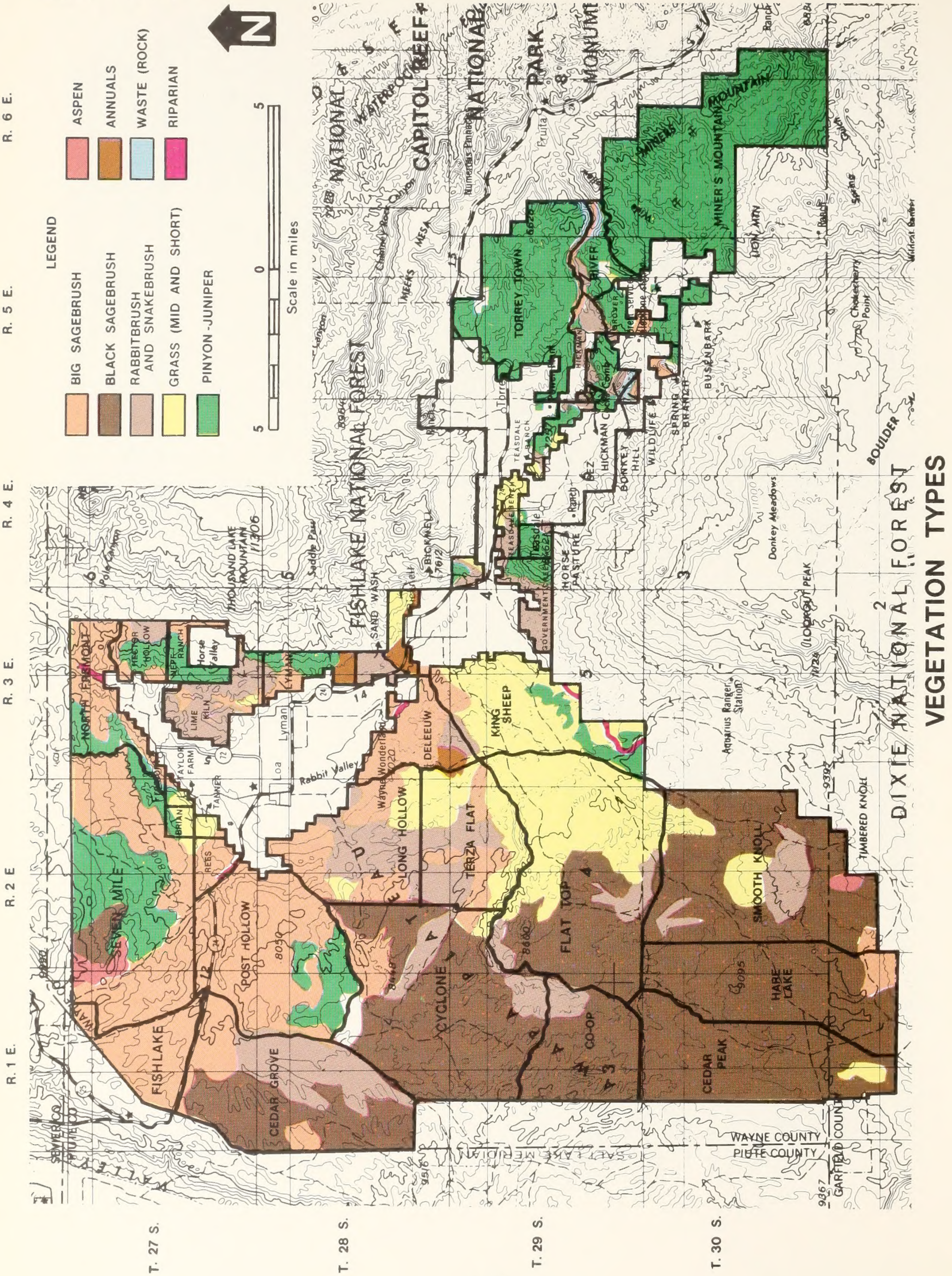


FIGURE 2-19

b. Vegetation Ground Cover, Composition, and Key Species

Table 2-13 lists the percentage of vegetation ground cover, key species, and vegetation composition of each allotment. Desirable species are those that contribute most of the forage for grazing and browsing animals, are perennial, and are the major contributors to stable watershed and soil conditions. These species would be used to monitor progress in reaching vegetation ground cover and composition objectives. (Appendix I-2 includes methodology for determining vegetation composition and ground cover.)

A key plant species is relatively abundant or potentially abundant in an area, relatively palatable to livestock or wildlife, and serves as an indicator of changes in the vegetation complex. Table 2-14 lists, for each allotment in the planning unit, the key species and the periods which are critical to their growth and reproduction.

c. Threatened and Endangered Plant Species

No officially listed threatened or endangered plant species are known to occur in the planning unit.

Table 2-15 lists proposed and candidate threatened and endangered plant species which are known to occur, or are likely to occur, within the planning unit. Proposed endangered plant species are those recorded by the U.S. Fish and Wildlife Service in the June 16, 1976 Federal Register. Candidate threatened and endangered plant species as recognized by the Bureau of Land Management in Utah (as of June 6, 1979) are those plants which are listed by county on pages 15-18 of Volume 38 No. 1, March 31, 1978 issue of the Great Basin Naturalist. Candidate and proposed threatened and endangered plant species are undergoing status review and may be officially listed or withdrawn from consideration. Distribution and life history information regarding these species within the planning unit is incomplete because there has been no intensive plant or plant habitat inventory.

d. Forage Production

Total vegetation production on the planning unit is unknown. A forage (vegetation useable to grazing animals) survey has been conducted, however, and is used as an indicator of vegetation production. The planning unit was surveyed in 1956-1957. Subsequent forage surveys in 1975-1976 showed less production on 11 allotments. The forage surveys were conducted under the ocular reconnaissance guidelines (see Chapter 1 and Appendix 1-2).

Forage production on 37 of the 43 allotments was determined directly from the surveys. On the 6 remaining allotments in the component where adjustment of allocation is proposed, forage production was calculated by comparing their dominant use with known carrying capacities for similar allotments in the area. (Methodology for calculating the capacities is shown in Appendix I-2.) Based on present good and fair forage condition, and estimated present big-game use, the big-game grazing capacity was estimated for the Fishlake, Cedar Grove, and Hickman Allotments. (The livestock grazing capacity was determined from the range surveys for these allotments).

Because forage condition is poor and trend is deteriorating, forage production for Seven Mile Allotment is estimated to be 622 AUMs or 24 percent fewer AUMs than the range survey indicated (see Appendix I-3 for calculations). The forage production estimate for the Wildlife Allotment (which has not been surveyed) was based on grazing capacities for adjacent allotments. Table 2-16 shows forage production by individual allotment.

TABLE 2-13

Ground Cover, Key Species, and Vegetation Composition

		Percent Composition																						
		Grasses											Forb	Shrubs										
Allotments	Percent Vegetation Ground Cover	Blue Grama	Galleta	Squirrel-tail	Letterman Needlegrass	Indian Ricegrass	Western Wheatgrass	Bluebunch Wheatgrass	Crested Wheatgrass	Needle-and-Thread	June-grass	Sand Dropseed	Pungent Muhly	Scarlet Globemallow	Big Sagebrush	Black Sagebrush	Douglas Rabbitbrush	Winterfat	Bitterbrush	Fringe Sagebrush	Bud Sagebrush	Shadscale	Fourwing Saltbush	Total Composition of Desirable Plants
NO LIVESTOCK GRAZING																								
Dez Hickman	26	50		2		11				3				2	1									69
Wildlife	19	25				7				5		2	28		11		2							80
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall & Winter)																								
Bicknell Spring																								
Cedar Peak	26			3	18		T									43	22							86
Hare Lake	12	3		6	16		8									41	9							83
Smooth Knoll	9			3	13		20									43	7							86
Bicknell Winter																								
Flat Top	15	15		16	1									4		14	3	T			2			55
King Sheep	20	85								T								15						100
Cedar Grove	26				7	1								2		54	13	1						78
Cyclone Co-op																								
Co-op	12							4							23	6	6		2					41
Cyclone	15	12		10				1							2	27			2					54
Fishlake	26	2		1	7	3		2							49	33	1							79
Hector Hollow	10	12		3		8									15	2	2	T						42
Lyman	30	39	7	1						2		4			3			T				2		52
Post Hollow	8	50		3		5						2			22	T								82
IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring)																								
Seven Mile	28	8		2	8	T	1			T	1				48	T	6		3	2				79
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION																								
Bicknell	18	66	3							6							7	T					T	82
Lime Kiln	25	60				T						1			12			2						75
Loa Winter																								
Deleeuw	13	30				1									50		1							83
Long Hollow	16	2												54	1	T	9	T						66
Terza Flat	18	57		2										7	32	T		T					T	96
Miner's Mountain	9					8			25														T	42
Neff Ranch	20	8		2		3									46		26	T						69

TABLE 2-13 (concluded)

Allotments	Percent Vegetation Ground Cover	Percent Composition																						Total Composition of Desirable Plants
		Grasses												Forb	Shrubs									
		Blue Grama	Galleta	Squirrel-tail	Letterman Needlegrass	Indian Ricegrass	Western Wheatgrass	Bluebunch Wheatgrass	Crested Wheatgrass	Needle-and-Thread	June-grass	Sand Dropseed	Pungent Muhly	Scarlet Globemallow	Big Sagebrush	Black Sagebrush	Douglas Rabbitbrush	Winterfat	Bitterbrush	Fringe Sagebrush	Bud Sagebrush	Shadscale	Fourwing Saltbush	
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (continued)																								
North Fremont	19	13			1	1									70	T	13							58
Sand Wash	18	13				3				4							26							46
Torrey Town	9		39			1						T			3		2							45
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION																								
Busenbark	13	18	2	T								1			66		9							60
Donkey Hill	26	50		2		11				3				2	1								T	69
Government Creek	9	35	1			T									10		50						T	96
Grover	13	66										4			17			T					T	87
Horse Pasture	5	11	2			1									38		18					22	T	84
River	5	45	1									5					40	T					T	91
Spring Branch	17	16				2				2		2			68		3						1	56
Teasdale Bench	26	42				T				T				5									1	48
Teasdale Ranch	7	54				T				T		1		21			1						2	79
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter)																								
Hickman	9	17	14			2				1				1	21		29						11	96

Source: BLM Range Inventories, 1956-57 and 1975-76; and Trend Studies, 1978.

TABLE 2-14

Parker Mountain Planning Unit--Key Species

Proposed Action Component and Allotments	Common Name	Percent of Composition	Critical Growth Period
NO LIVESTOCK GRAZING			
Dez Hickman	Indian ricegrass	11	4/3-7/19
	Needle-and-thread grass	3	4/3-7/15
	Big sagebrush	1	7/1-10/15
Wildlife	Indian ricegrass	7	4/3-7/19
	Needle-and-thread grass	5	4/3-7/15
	Big sagebrush	11	7/1-10/15
	Mountain mahogany	T	5/20-7/15
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, and Winter)			
Bicknell Spring	n/a		
Cedar Peak	Letterman needlegrass	18	5/20-7/15
	Western wheatgrass	T	6/1-7/20
	Black sagebrush	43	8/1-10/15
Hare Lake	Letterman needlegrass	16	5/20-7/15
	Western wheatgrass	8	6/1-7/20
	Black sagebrush	41	8/1-10/15
Smooth Knoll	Letterman needlegrass	13	5/20-7/15
	Western wheatgrass	20	6/1-7/20
	Black sagebrush	43	8/1-10/15
Bicknell Winter	n/a		
Flat Top	Letterman needlegrass	T	5/20-7/15
	Black sagebrush	14	8/1-10/15
	Winterfat	T	4/5-8/30
King Sheep	Needle-and-thread grass	T	4/3-7/15
	Winterfat	15	4/5-8/30
Cedar Grove	Letterman needlegrass	7	5/20-7/15
	Indian ricegrass	1	5/18-7/19
	Black sagebrush	54	8/1-10/15
	Winterfat	1	4/5-8/30

TABLE 2-14 (continued)

Proposed Action Component and Allotments	Common Name	Percent of Composition	Critical Growth Period
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING			
Cyclone Co-op	n/a		
Co-op	Bluebunch wheatgrass	4	5/18-7/30
	Black sagebrush	6	8/1-10/15
	Bitterbrush	2	5/20-7/15
Cyclone	Bluebunch wheatgrass	1	5/18-7/30
	Black sagebrush	27	8/1-10/15
	Bitterbrush	2	5/20-7/15
Fishlake	Indian ricegrass	3	5/18-7/19
	Bluebunch wheatgrass	2	5/18-7/30
	Black sagebrush	33	8/1-10/15
Hector Hollow	Indian ricegrass	8	4/3-7/19
	Black sagebrush	2	8/1-10/15
	Winterfat	T	4/5-8/30
Lyman	Needle-and-thread grass	2	4/3-7/15
	Winterfat	T	4/5-8/30
Post Hollow	Indian ricegrass	5	4/3-7/19
	Black sagebrush	T	8/1-10/15
IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring)			
Seven Mile	Western wheatgrass	1	6/1-7/20
	Letterman needlegrass	8	5/20-7/15
	Indian ricegrass	T	4/3-7/15
	Bitterbrush	3	5/20-7/15
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter)			
Bicknell	Needle-and-thread grass	6	4/3-7/15
	Winterfat	T	4/5-8/30
	Fourwing saltbush	T	5/1-8/30
Lime Kiln	Indian ricegrass	T	4/3-7/15
	Winter Fat	2	4/15-8/30
Loa Winter	n/a		
Deleeuw	Indian ricegrass	1	4/3-7/19

TABLE 2-14 (continued)

Proposed Action Component and Allotments	Common Name	Percent of Composition	Critical Growth Period
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter) (continued)			
Long Hollow	Black sagebrush	T	8/1-10/15
	Winterfat	T	4/5-8/30
Terza Flat	Black sagebrush	T	8/1-10/15
	Winterfat	T	4/5-8/30
	Fourwing saltbush	T	5/1-8/30
Miner's Mountain	Indian ricegrass	8	4/3-7/19
	Crested wheatgrass	25	4/3-7/30
	Fourwing saltbush	T	5/1-8/30
Neff Ranch	Indian ricegrass	3	4/3-7/19
	Winterfat	T	4/5-8/30
North Fremont	Indian ricegrass	1	4/3-7/19
	Letterman needlegrass	1	4/3-7/19
	Black sagebrush	T	8/1-10/15
Sand Wash	Indian ricegrass	3	4/3-7/19
	Needle-and-thread grass	4	4/3-7/19
Torrey Town	Indian ricegrass	1	4/3-7/19
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Winter)			
Busenbark	Squirreltail	T	4/1-7/30
Donkey Hill	Indian ricegrass	11	4/3-7/19
	Fourwing saltbush	T	5/1-8/30
Government Creek	Indian ricegrass	T	4/3-7/19
	Fourwing saltbush	T	5/1-8/30
Grover	Winterfat	T	4/5-8/30
	Fourwing saltbush	T	5/1-8/30
Horse Pasture	Indian ricegrass	1	4/30-7/19
	Fourwing saltbush	T	5/1-8/30

TABLE 2-14 (concluded)

Proposed Action Component and Allotments	Common Name	Percent of Composition	Critical Growth Period
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Winter) (continued)			
River	Winterfat	T	4/5-8/30
	Fourwing saltbush	T	5/1-8/30
Spring Branch	Indian ricegrass	2	4/3-7/19
	Needle-and-thread grass	2	4/3-7/15
	Fourwing saltbush	1	5/1-8/30
Teasdale Bench	Indian ricegrass	T	4/3-7/19
	Needle-and-thread grass	T	4/3-7/15
	Fourwing saltbush	1	5/1-8/30
Teasdale Ranch	Indian ricegrass	T	4/3-7/19
	Needle-and-thread grass	T	4/3-7/15
	Fourwing saltbush	2	5/1-8/30
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter)			
Hickman	Indian ricegrass	2	4/3-7/19
	Needle-and-thread grass	1	4/3-7/15
	Fourwing saltbush	11	5/1-8/30

Source: BLM Range Inventories, 1956-57 and 1975-76.

TABLE 2-15

Proposed and Candidate Threatened and Endangered Plant Species That Occur Within the Parker Mountain Planning Unit

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Asclepias ruthiae (milkweed)

Family: Asclepiadaceae
Status: Candidate threatened species
"Endemic, common in disjunct populations," Welsh, et al., 1975, 1978.
Cover Type: Desert shrub zone; Mormon tea and galleta grass.
Special Habitat Requirements: Red sandy soil, low alkaline clay hills; rocky slopes.
Elevation: 4,400-5,200 feet
Abundance: Common in disjunct populations
Flower Time: May-June

Astragalus castaneiformis var. consobrinus (milkvetch)

Family: Fabaceae (pea family)
Status: Candidate threatened species.
"Endemic, rare, and obscure, possibly threatened," Welsh et al., 1975, 1978.
Cover Type: Barren slopes but sometimes in yellow pine forest.
Special Habitat Requirements: Open gravelly or sandy knolls or barren stony hillsides, and cobblestone bluffs, in alluvial soils of varied composition.
Elevation: 6,000-8000 feet
Abundance: Locally plentiful
Flower Time: May-June

Astragalus loanus (Loa milkvetch)

Family: Fabaceae (pea family)
Status: Proposed endangered (Federal Register 6/16/76).
"Endemic, rare, and threatened," Welsh, et al., 1975, 1978.
Cover Type: Sagebrush, black sage, and pinyon-juniper.
Special Habitat Requirements: Open hillsides in gravelly volcanic or calcareous soils.
Elevation: 6,000-8,900 feet.
Abundance: Apparently rare.
Flower Time: May and June

Gilia caespitosa (Gilia)

Family: Polemoniaceae
Status: Proposed endangered species (Federal Register June 16, 1976)
"Endemic, rare, and endangered," Welsh, et al., 1975, 1978.
Cover Type: Pinyon-juniper woodland
Special Habitat Requirements: Barren sandstone cliffs.
Elevation: 7,000-8,500 feet
Abundance: Unknown
Flower Time: unknown.

TABLE 2-16

Estimated Present Allotment Forage Production

Components and Allotments	BLM Acres in Allotment	Forage Production AUMs
NO LIVESTOCK GRAZING		
Dez Hickman	155	6
Wildlife	320	4
Subtotal	475	10
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)		
Bicknell Spring	n/a	1,029
Cedar Peak	12,351	1,046
Hare Lake	11,453	870
Smooth Knoll	18,761	1,682
Bicknell Winter	n/a	1,306
Flat Top	19,256	1,265
King Sheep	9,341	275
Cedar Grove	11,755	1,320
Cyclone Co-op	n/a	622
Co-op	7,160	508
Cyclone	17,603	1,203
Fishlake	2,880	236
Hector Hollow	2,002	199
Lyman	2,037	157
Post Hollow	11,715	631
Subtotal	126,314	12,349

TABLE 2-16 (continued)

Components and Allotments	BLM Acres in Allotment	Forage Production AUMs
IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring)		
Seven Mile	21,159	660
Subtotal	21,159	660
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter)		
Bicknell	1,819	149
Lime Kiln	2,960	332
Loa Winter	n/a	142
Deleeuw	3,238	181
Long Hollow	8,064	393
Terza Flat	7,278	334
Miner's Mountain	15,683	320
Neff Ranch	1,646	180
North Fremont	3,351	235
Sand Wash	778	40
Torrey Town	9,477	37
Subtotal	54,294	2,343

TABLE 2-16 (concluded)

Component and Allotments	BLM Acres in Allotment	Forage Production AUMs
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Winter)		
Busenbark	356	30
Donkey Hill	1,367	25
Government Creek	1,842	91
Grover	1,582	178
Horse Pasture	640	14
River	2,029	75
Spring Branch	492	52
Teasdale Bench	1,200	20
Teasdale Ranch	1,035	80
Subtotal	10,543	565
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter)		
Hickman	272	12
Subtotal	272	12
GRAND TOTAL	213,057	15,939

Source: BLM Range Inventories, 1956-57 and 1975-76.

e. Forage Condition

Ecological range condition is determined by the current productivity of a range relative to what that range is naturally capable of producing. Ecological range condition is not known for the planning unit. Forage conditions, however, are known; and therefore this environmental impact statement deals only with forage condition.

Forage condition is the present state of health of a range, based on soil erosion conditions and the amount and quality of forage it is capable of producing for grazing animals (including wildlife). It is expressed as good, fair, or poor, based on the percentage of desirable, intermediate, and undesirable plants and soil erosion conditions on the range. Plant desirability is mainly a function of productivity, palatability, nutrition, and dominance under climax or near-climax ecological conditions (see Appendix II-6 for a description of forage condition categories and methodology for determining forage condition classes). Figure 2-20 and 2-21 show examples of good, fair, and poor forage condition ranges.

Forage condition is currently good on 112,088 acres (53 percent), fair on 72,128 acres (34 percent), and poor on 28,841 acres, 13 percent of the planning unit. Table 2-17 shows the forage condition for each grazing allotment within the Parker Mountain Planning Unit.

f. Riparian Condition

Of the 11 streams in the planning unit, only four have been surveyed for riparian vegetation. Of the 67 acres of surveyed riparian zone vegetation along these streams, 47 acres are in good condition (70 percent), 11 acres are in fair condition (16 percent), and 9 acres are in poor condition (14 percent). Table 2-18 shows the condition and acreage of the riparian vegetation of these streams and the allotments involved. The condition rating is based on a stream survey (BLM, 1977a; refer to Appendix II-7 for a description of the survey methods and definition of terms).

g. Forage Condition Trend

Forage condition trend describes the changes in forage condition. It is expressed as improving, static, or declining.

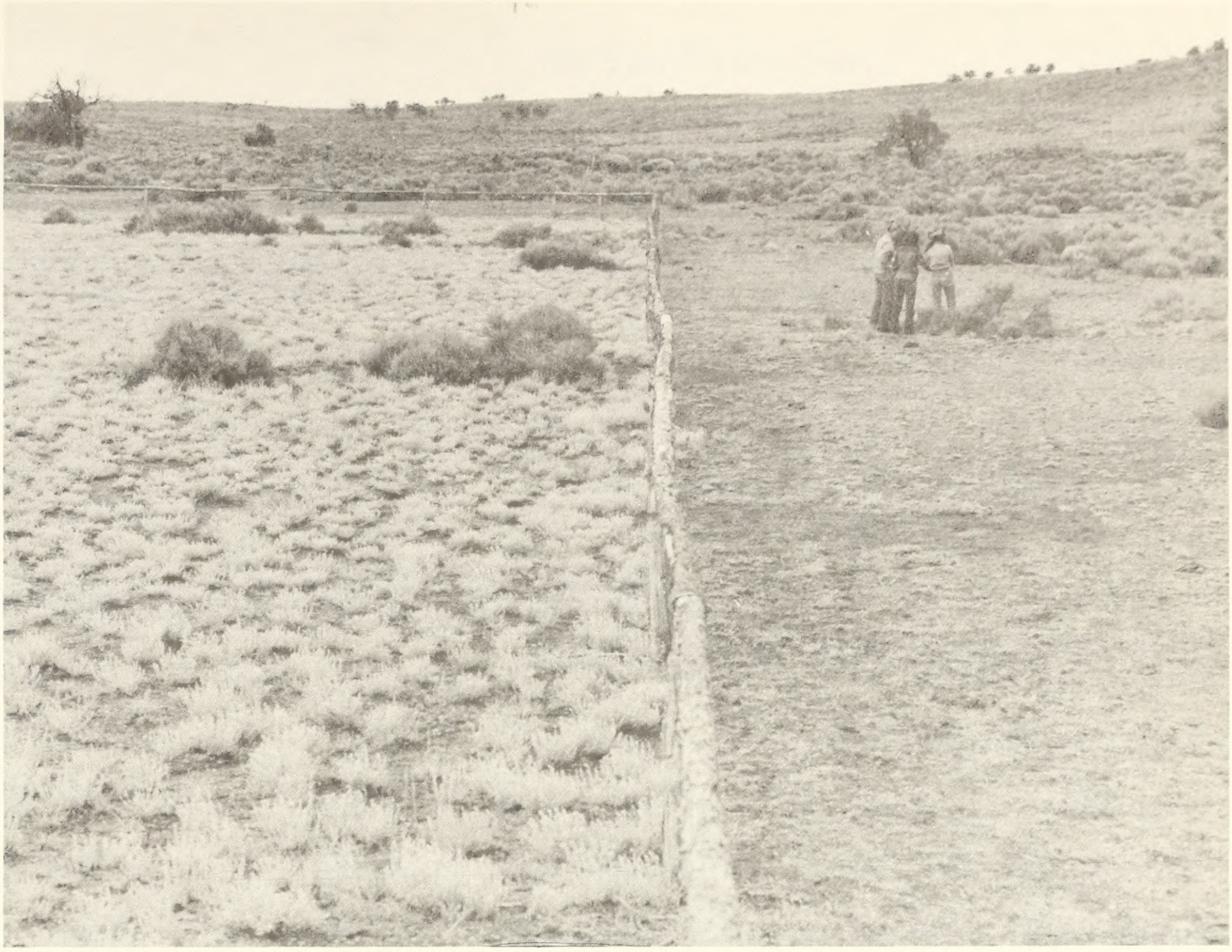
Forage condition trend studies have been conducted on 23 allotments that include 182,881 acres or 86 percent of the planning unit's public land. These studies show that all 182,881 acres are declining. Table 2-19 shows the known forage condition trend. Techniques used to determine trend are described in Appendix II-8. Even though empirical data are lacking on the rest of the area, it is the opinion of local range technicians and managers, based on observations, experience, and comparisons to similar allotments elsewhere, that trend is declining on all allotments in the planning unit.

7. Animal Life

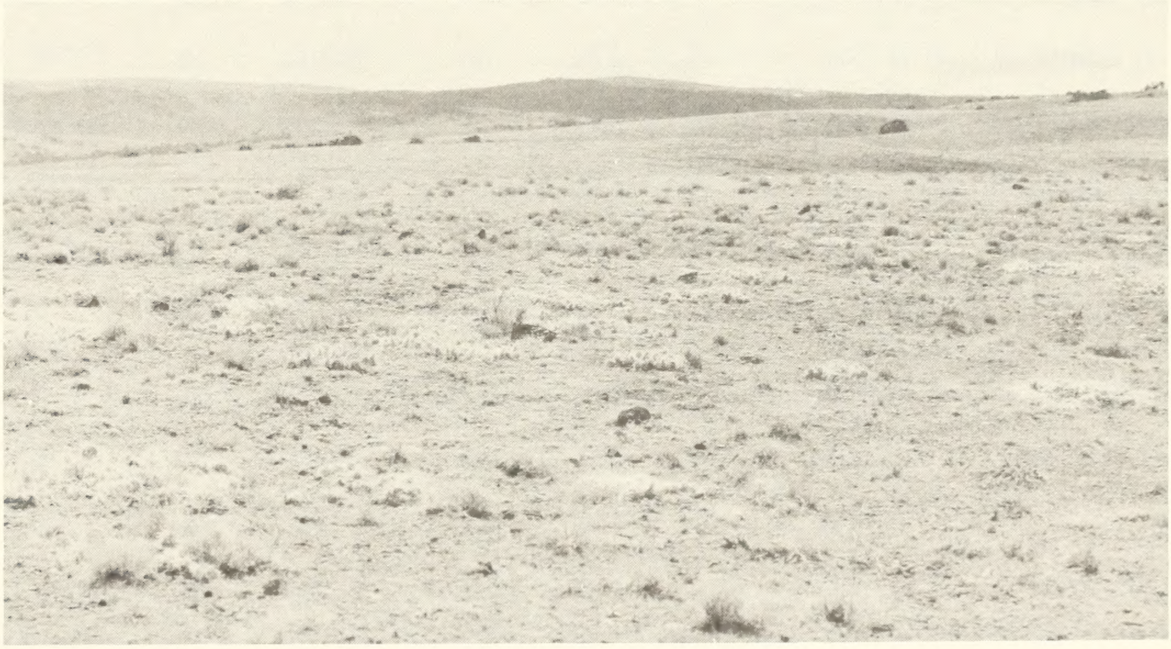
a. Big Game

Big game species in the planning unit for which forage has been allocated are mule deer, elk, and pronghorn antelope. Crucial ranges for these species are shown in Figure 2-22.

FIGURE 2-20



GOOD AND POOR FORAGE CONDITION
(WINTERFAT ON TERZA FLAT ENCLOSURE)



FAIR FORAGE CONDITION
(BLUE GRAMA-ON KING SHEEP ALLOTMENT)

FIGURE 2-21

TABLE 2-17

Allotment Forage Condition (Based on Dominant Use[a])

Component and Allotments	BLM Acres in Allotment	Good Acres	Good %	Fair Acres	Fair %	Poor Acres	Poor %
NO LIVESTOCK GRAZING							
Dez Hickman	155	155	100	0	0	0	0
Wildlife	320	320	100	0	0	0	0
Subtotal	475	475	100	0	0	0	0
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)							
Bicknell Spring	n/a	n/a					
Cedar Peak	12,351	11,733	95	618	5	0	0
Hare Lake	11,453	11,453	100	0	0	0	0
Smooth Knoll	18,761	17,823	95	938	5	0	0
Bicknell Winter	n/a	n/a					
Flat Top	19,256	19,256	100	0	0	0	0
King Sheep	9,341	7,473	80	1,868	20	0	0
Cedar Grove	11,755	8,816	75	1,293	11	1,646	14
Cyclone Co-op	n/a	n/a					
Co-op	7,160	7,160	100	0	0	0	0
Cyclone	17,603	14,082	80	3,521	20	0	0
Fishlake	2,880	547	19	2,333	81	0	0
Hector Hollow	2,002	581	29	1,421	71	0	0
Lyman	2,037	448	22	1,589	78	0	0
Post Hollow	11,715	117	1	8,201	70	3,397	29
Subtotal	126,314	99,489	79	21,782	17	5,043	4

TABLE 2-17 (continued)

Component and Allotments	BLM Acres in Allotment	Good Acres	Good %	Fair Acres	Fair %	Poor Acres	Poor %
IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring)							
Seven Mile	21,159	4,136	20	15,456	73	1,567	7
Subtotal	21,159	4,136	20	15,456	73	1,567	7
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter)							
Bicknell	1,819	928	51	400	22	491	27
Lime Kiln	2,960	0	0	2,960	100	0	0
Loa Winter	n/a						
Deleeuw	3,238	259	8	2,429	75	550	17
Long Hollow	8,064	242	3	3,226	40	4,596	57
Terza Flat	7,278	873	12	4,876	67	1,529	21
Miner's Mountain	15,683	1,200	8	14,483	92	0	0
Neff Ranch	1,646	0	0	1,646	100	0	0
North Fremont	3,351	0	0	704	21	2,647	79
Sand Wash	778	0	0	778	100	0	0
Torrey Town	9,477	0	0	0	0	9,477	100
Subtotal	54,294	3,502	6	31,502	58	19,290	36

TABLE 2-17 (concluded)

Component and Allotments	BLM Acres in Allotment	Good		Fair		Poor	
		Acres	%	Acres	%	Acres	%
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Winter)							
Busenbark	356	0	0	0	0	356	100
Donkey Hill	1,367	1,353	99	14	1	0	0
Government Creek	1,842	184	10	0	0	1,658	90
Grover	1,582	79	5	1,503	95	0	0
Horse Pasture	640	0	0	0	0	640	100
River	2,029	1,420	70	609	30	0	0
Spring Branch	492	0	0	492	100	0	0
Teasdale Bench	1,200	360	30	636	53	204	17
Teasdale Ranch	1,035	818	79	134	13	83	8
Subtotal	10,543	4,214	40	3,388	32	2,941	28
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter)							
Hickman	272	272	100	0	0	0	0
Subtotal	272	272	100	0	0	0	0
GRAND TOTAL	213,057	112,088	53	72,128	34	28,841	13

Source: BLM Range Inventories, 1956-57 and 1975-76.

[a] Refers to that type of grazing animal that removes the most forage.

TABLE 2-18

Riparian Condition

Allotment	Stream Name	Acres of Riparian Vegetation	Condition[a]
King Sheep	Pine Creek	11	Fair
Post Hollow	Riley Creek	10	Good
Long Hollow	Road Creek	2	Data being gathered.
North Fremont	Fremont River	12	Good
River	Fremont River	23	Good
Hickman	Fremont River	9	Poor
TOTAL		67	

Source: BLM, 1977a.

[a] See Appendix II-8 for methodology and definition of terms.

TABLE 2-19

Forage Condition Trend

Allotment	Public Land (acres)	Year Study Established	Trend (acres) Improving	Trend (acres) Static	Trend (acres) Declining
NO LIVESTOCK GRAZING					
Dez Hickman	155			No Studies	
Wildlife	320			No Studies	
Subtotal	475				
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)					
Bicknell Spring	n/a				n/a
Cedar Peak	12,351	1968			12,351
Hare Lake	11,453	1968			11,453
Smooth Knoll	18,761	1968			18,761
Bicknell Winter	n/a				n/a
Flat Top	19,256	1968			19,256
King Sheep	9,341	1968			9,341
Cedar Grove	11,755	1973			11,755
Cyclone Co-op	n/a				n/a
Co-op	7,160	1967			7,160
Cyclone	17,603	1967			17,603
Fishlake	2,880	1967			2,880
Hector Hollow	2,002			No studies	
Lyman	2,037			No studies	
Post Hollow	11,715	1973			11,715
Subtotal	126,314				

TABLE 2-19 (continued)

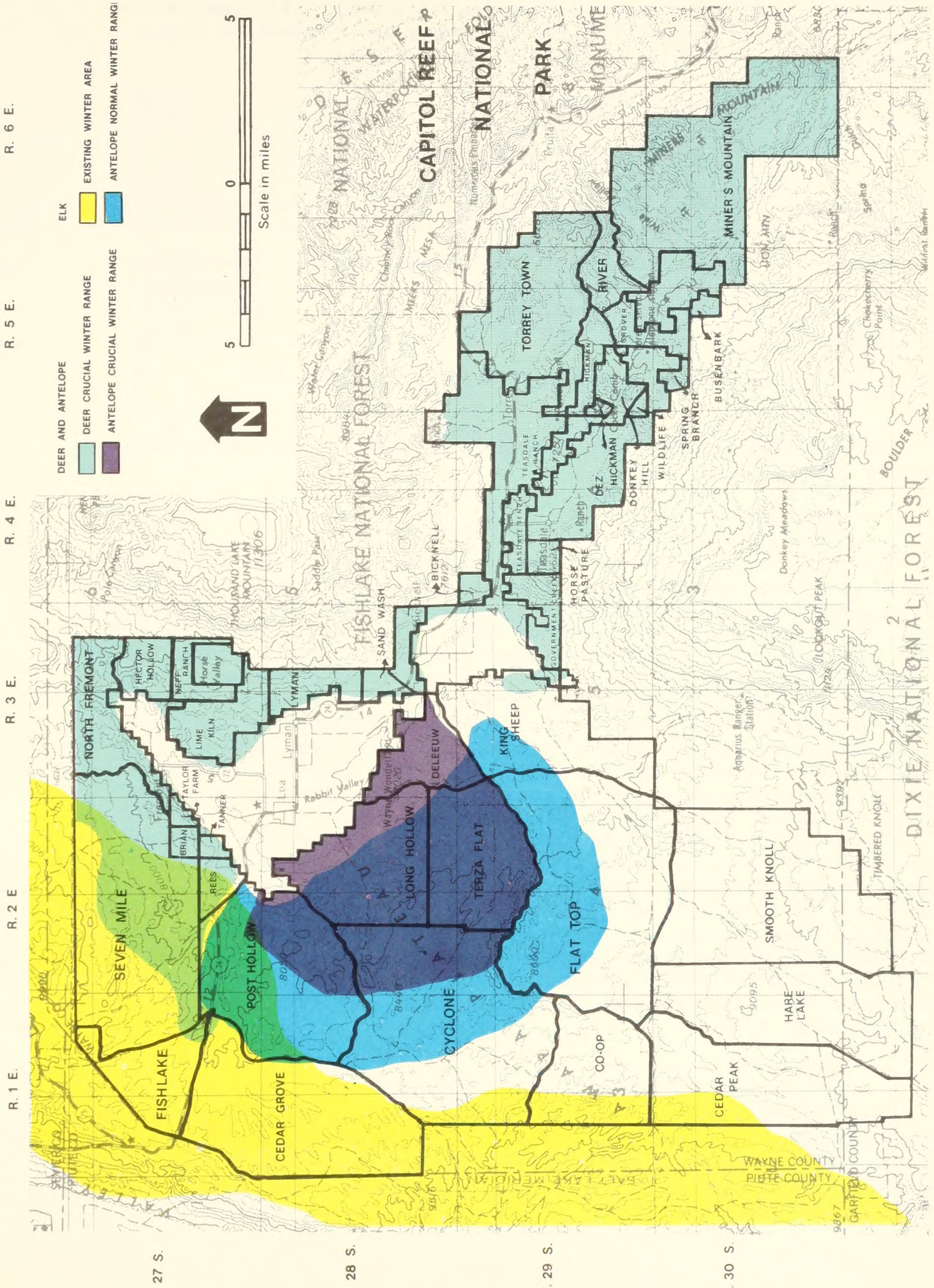
Allotment	Public Land (acres)	Year Study Established	Trend (acres)		
			Improving	Static	Declining
IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring)					
Seven Mile	21,159	1968			21,159
Subtotal	21,159				21,159
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter)					
Bicknell	1,819		No studies		
Lime Kiln	2,960		No studies		
Loa Winter	n/a				n/a
Deleeuw	3,238	1973			3,238
Long Hollow	8,064	1973			8,064
Terza Flat	7,278	1973			7,278
Miner's Mtn.	15,683	1968			15,683
Neff Ranch	1,646		No studies		
North Fremont	3,351		No studies		
Sand Wash	778		No studies		
Torrey Town	9,477		No studies		
Subtotal	54,294				
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Winter)					
Busenbark	356		No studies		
Donkey Hill	1,367	1968			1,367
Government Creek	1,842	1968	No studies		

TABLE 2-19 (concluded)

Allotment	Public Land (acres)	Year Study Established	Trend (acres) Improving	Static	Declining
CONTINUE SEASON-LONG GRAZING ADJUSTED BY UTILIZATION (Winter) (Continued)					
Grover	1,532	1968			1,582
Horse Pasture	640		No studies		
River	2,029		No studies		
Spring Branch	492		No studies		
Teasdale Bench	1,200	1968			1,200
Teasdale Ranch	1,035	1968			1,035
Subtotal	10,543				
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter)					
Hickman	272		No studies		
Subtotal	272				
GRAND TOTAL	213,057				

Source: BLM forage condition trend files, 1967-78.

DUMMY FIGURE 2-22



DISTRIBUTION AND RANGE (DEER, ELK, AND ANTELOPE)

FIGURE 2-22

Present population trends are given on Table 2-20. Big game seasons of use have been established as 7 months for summer and 5 months for winter. The AUM reservation for wildlife is shown in Appendix I-1.

TABLE 2-20

Big Game Population Trends

Species	Type of Study	Trend
Deer	Pellet Group/Harvest data	Increasing
Elk	Aerial Census	Increasing
Antelope	Aerial Census	Static

Source: Utah Division of Wildlife Resources (UDWR), 1979.

The estimated big game habitat rating, as shown on Table 2-21, was provided by UDWR (Coffeen, 1979).

Mule Deer

This planning unit provides primarily winter, fall, early spring, and limited year-long range for deer. Present population estimates are 109 deer in the summar and 1,103 in the winter. Winter range is the limiting factor for deer in the planning unit (Bowden, 1979). The crucial winter range is shown in Figure 2-22. Crucial deer winter ranges are mainly located between irrigated private land and the steep slopes and ledges of intermediate and summer ranges. Due to the condition of the range (see Table 2-21) and the season of livestock use (shown in Appendix I-1), the supply of deer forage is often consumed on many of these allotments before the deer arrive in late fall or early winter (November and December). Desirable yearlong forage species include bitterbrush, serviceberry, curlleaf mountain mahogany, birchleaf mountain mahogany, big sagebrush, and black sagebrush.

Generally, desirable browse species are in poor condition but trend for deer winter forage is improving slightly after many years of heavy over-utilization during the late 1960's and early 1970's. The improvement is a result of good winter moisture 1977 and 1978, very low deer populations, and less-than-authorized livestock use for several years. In the late 1960's and '70's, extensive deer herd reduction programs were undertaken (UDWR, 1965-76). These reductions, combined with a winter kill in 1972, depressed the deer herds in these units below the carrying capacity of the ranges (Parker Mountain Planning Documents, 1978).

Elk

Since the late 1960's, approximately 200 elk from the Fishlake Herd Unit winter on public land (see Figure 2-22). In addition, another 30-40 animals that are resident on the State Land Block use the Cedar Grove, Cyclone, Co-op, and Cedar Peak allotments on and off yearlong (Bowden, 1978; BLM, 1972 to 1979).

TABLE 2-21

Significant Wildlife--Overall Habitat Rating

Proposed Action Sub-component and Allot.	Deer		Elk		Antelope		Sage Grouse		Utah Prairie Dog	
	Season of Use	Overall Habitat Rating	Season of Use	Overall Habitat Rating	Season of Use	Overall Habitat Rating	Season of Use	Overall Habitat Rating	Season of Use	Overall Habitat Rating
NO LIVESTOCK GRAZING										
Dez Hickman		Poor	a	a	a	a	a	a	a	a
Wildlife		Poor	a	a	a	a	a	a	a	a
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING										
Bicknell Spring	Summer Winter	Fair Fair	Summer Winter	a Poor	Summer Winter	Fair Fair	Summer Winter	Fair Fair	Spring Summer	Good Fair
Cedar Peak	Summer Winter	Good a	Summer Winter	Fair a	Summer Winter	Good a	Summer Winter	Good a	Spring Summer	Good Fair
Hare Lake	Summer Winter	Fair Fair	b b	b b	Summer Winter	Good a	Summer Winter	Good a	Spring Summer	Good Fair
Smooth Knoll	Summer Winter	Fair b	Summer Winter	Fair b	Summer Winter	Good b	Summer Winter	Good a	Spring Summer	Good Fair
Bicknell Winter	Summer Winter	Fair Fair	Summer Winter	Poor Poor	Summer Winter	Fair Fair	Summer Winter	Fair Fair	Spring Summer	Good Good
Flat Top	Summer Winter	Fair Fair	Summer Winter	Poor Poor	Summer Winter	Fair Fair	Summer Winter	Fair Fair	Spring Summer	Good Good
King Sheep	Summer Winter	Fair Fair	Summer Winter	Poor Poor	Summer Winter	Fair Fair	Summer Winter	Fair Fair	Spring Summer	Good Good
Cedar Grove	Summer Winter	Good Fair	Summer Winter	Fair Good	Summer Winter	Good Good	Spring Winter	Good Fair	Spring Summer	Fair Fair
Cyclone Co-op	Summer Winter	Good Fair	Summer Winter	Fair Fair	Summer Winter	Good Good	Summer Winter	Good Fair	Spring Summer	Good Fair
Co-op	Summer Winter	Good Fair	Summer Winter	Fair Fair	Summer Winter	Good Good	Summer Winter	Good Fair	Spring Summer	Good Fair
Cyclone	Summer Winter	Good Fair	Summer Winter	Fair Fair	Summer Winter	Good Good	Summer Winter	Good Fair	Spring Summer	Good Fair
Fishlake	Summer Winter	Good Good	Summer Winter	Good Good	Summer Winter	Good Fair	Summer Winter	Fair a	a a	a a
Hector Hollow	Summer Winter	Poor Poor	a a	a a	a a	a a	a a	a a	a a	a a
Lyman	Summer Winter	Poor Fair	a a	a a	a a	a a	a a	a a	a a	a a
Post Hollow	Summer Winter	Poor Fair	Summer Winter	Poor Fair	Summer Winter	Fair Fair	Summer Winter	Fair Fair	a a	a a

TABLE 2-21 (continued)

	Deer		Elk		Antelope		Sage Grouse		Utah Prairie Dog	
Proposed Action Sub-component and Allot.	Season of Use	Overall Habitat Rating	Season of Use	Overall Habitat Rating	Season of Use	Overall Habitat Rating	Season of Use	Overall Habitat Rating	Season of Use	Overall Habitat Rating
IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring)										
Seven Mile^c	Spring, Fall and Winter	Good	Winter and Spring	Good	Spring and Summer	Good	b b	b b	a a	a a
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter)										
Bicknell	Summer Winter	Fair Fair	a a	a a	a a	a a	a a	a a	a a	a a
Lime Kiln	Summer Winter	Fair Fair	a a	a a	a a	a a	a a	a a	Summer Winter	Fair Fair
Loa Winter	Summer Winter	Fair Fair	a a	a a	Summer Winter	Fair Good	Summer Winter	Poor Fair		
Deleeuw	Summer Winter	Poor Fair	a a	a a	Summer Winter	Fair Fair	Summer Winter	Poor Fair	a a	a a
Terza Flat	Summer Winter	Poor Fair	a a	a a	Summer Winter	Fair Good	Summer Winter	Fair Good	a a	a a
Long Hollow	Summer Winter	Fair Good	a a	a a	Summer Winter	Fair Good	Summer Winter	Fair Fair	a a	a a
Miner's Mountain	Summer Winter	Fair Good	Summer Winter	Fair Good	a a	a a	a a	a a	a a	a a
Neff Ranch	Summer Winter	Poor Fair	a a	a a	a a	a a	a a	a a	a a	a a
North Fremont	Summer Winter	Poor Fair	b b	b b	b b	b b	b b	b b	b b	b b
Sand Wash	Summer Winter	Poor Fair	a a	a a	a a	a a	a a	a a	a a	a a
Torrey Town	Summer Winter	Poor Fair	a a	a a	a a	a a	a a	a a	a a	a a

TABLE 2-21 (concluded)

	Deer		Elk		Antelope		Sage Grouse		Utah Prairie Dog	
Proposed Action Sub-component and Allot.	Season of Use	Overall Habitat Rating	Season of Use	Overall Habitat Rating	Season of Use	Overall Habitat Rating	Season of Use	Overall Habitat Rating	Season of Use	Overall Habitat Rating
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Winter)										
Busenbark	Summer	Poor	a	a	a	a	a	a	a	a
	Winter	Fair	a	a	a	a	a	a	a	a
Donkey Hill	Summer	Poor	a	a	a	a	a	a	a	a
	Winter	Fair	a	a	a	a	a	a	a	a
Government Creek	Summer	Poor	a	a	a	a	a	a	a	a
	Winter	Poor	a	a	a	a	a	a	a	a
Grover	Summer	Poor	a	a	a	a	a	a	a	a
	Winter	Fair	a	a	a	a	a	a	a	a
Horse Pasture	Summer	Poor	a	a	a	a	a	a	a	a
	Winter	Fair	a	a	a	a	a	a	a	a
River	Summer	Poor	a	a	a	a	a	a	a	a
	Winter	Fair	a	a	a	a	a	a	a	a
Spring Branch	Summer	Poor	a	a	a	a	a	a	a	a
	Winter	Poor	a	a	a	a	a	a	a	a
Teasdale Bench	Summer	Poor	a	a	a	a	a	a	a	a
	Winter	Fair	a	a	a	a	a	a	a	a
Teasdale Ranch	Summer	Poor	a	a	a	a	a	a	a	a
	Winter	Fair	a	a	a	a	a	a	a	a
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter)										
Hickman	Summer	Poor	a	a	a	a	a	a	a	a
	Winter	Fair	a	a	a	a	a	a	a	a

Source: UDWR, 1979.

Notes: [a] This animal is not found in this allotment.

[b] Data is insufficient to give habitat rating.

[c] Includes Rees, Tanner, Brian, and Taylor farm allotments.

Explanation of overall habitat rating:
Deer: Poor - Lack of preferred browse species - existing browse hedged or decadent.
Fair - Secondary browse species light use available-preferred browse heavily hedged or lacking.
Good - Preferred browse present-moderately hedged-secondary species abundant.
Excellent - Preferred browse abundant - light-moderate hedging-second species little used.

Elk: Poor, Fair, Good, Excellent.

Antelope: Poor, Fair, Good, Excellent.

Sage Grouse: Poor, Fair, Good, Excellent.

Utah Prairie Dog: Poor, Fair, Good, Excellent.

The UDWR in cooperation with the Dixie National Forest, established an elk herd on Boulder Mountain in 1977. This herd is expected to increase and will probably use public land in the Bicknell Spring, King Sheep, and Flat Top allotments.

Forage in the planning unit is adequate for the existing elk numbers. Recent improved management practices and extensive range rehabilitation projects (sagebrush spraying) on the State Land Block have created good elk habitat on that part of the Awapa Plateau and have provided for the small yearlong herd on the State Land Block.

Though elk prefer grass ranges, stomach analysis often shows that they eat other types of plants if they are available to them (Murie, 1951). Important elk forage species on the planning unit are mountain mahogany, sagebrush (especially mature seed stalks), Indian ricegrass, needle-and-thread grass, and bluebunch wheatgrass.

Limiting factors for elk in this planning unit are presently unknown. Normal elk winter range and migration patterns are shown on Figure 2-22. Competition for forage between deer and elk is not a problem because different areas are usually used during critical winter periods.

Pronghorn Antelope

Antelope populations have increased from about 129 in 1965 to the present herd of approximately 750. The heavy snowfall during the winter of 1978-79 forced antelope to concentrate in the lowest part of their crucial winter range, where the UDWR was able to get the most accurate count (738) ever made. Just prior to the 1978 hunting season and a trapping program during 1978-79, the herd size was approximately 900 animals.

Summer range has more than adequate food and cover for the existing number of antelope. The UDWR intends to use this prolific herd as a "reservoir" from which they would continually remove animals for transplanting to other areas of the state (Bowden, 1978).

Forage AUMs within the normal winter range are more than sufficient for the present population. In ordinary winters, the herd is scattered over the Post Hollow, Cyclone, Flat Top, King Sheep, Loa Winter, Terza Flat, Deleeuw, and Long Hollow allotments. Occasionally, however, a very severe winter may force the antelope to concentrate in the more restricted crucial winter range, which is the limiting factor on the herd. The Loa Winter, Terza Flat, Deleeuw, Long Hollow allotments and eastern part of the Post Hollow Allotment contain the most crucial winter range (see Figure 2-22). Additional carrying capacity is provided by the state sections scattered throughout the antelope range.

Dietary studies in this area, elsewhere in Utah (Smith, 1974) and other states indicate that as a general rule, antelope food consumption is influenced by both availability and preference. Although antelope prefer forbs and grasses during the summer months, on the Parker Mountain Planning Unit browse species make up a high percent of the antelope diet (Beale, 1971). As grasses and forbs become available, they appear as a greater portion of the diet. Presently big sagebrush, black sagebrush, rabbitbrush and short grass vegetation subtypes (Table 2-11) in the planning unit meet food and cover requirements for a viable and healthy pronghorn population.

The only permanent water sources on public land available to antelope are Pine Creek and the Antelope Spring pipeline facilities located in the southeast corner of the Awapa Plateau. All other water sources are unreliable. Water is scare during dry summers. The amount of water remaining in reservoirs during the critical months from May to June is dependent upon the amount of precipitation, condition of the sealing layer in the bottom of the reservoirs, and the amount of water removed by livestock. Some livestock operators haul water that occasionally may be used by antelope, but more often, livestock are removed from the area when the water supply is gone. The number of antelope that remain on public land in summer is unknown and is contingent upon the amount of water left in the reservoirs after livestock leave in June.

In search of water, antelope move to higher elevations on the Dixie and Fishlake Forests and the State Land Block. Some move as far as 15 to 20 miles to areas where water is more prevalent, as well as to areas of more succulent forage that reduces their water needs. These movements are highly dependent on weather conditions. During the peak of the dry summers of 1977 and 1978, most of the antelope were found on the two National Forests, the Seven Mile Allotment, and the State Land Block (Bowden, 1979).

All of the Bureau-controlled fences on public land in the planning unit have been modified to allow antelope to move more easily.

b. Upland Game--Sage Grouse

Sage grouse are the most important gamebirds in the area. They inhabit higher elevations on the Awapa Plateau, and the Seven Mile, Fishlake and North Fremont allotments. Wintering areas, strutting grounds, and nesting areas are shown in Figure 2-23. The habitat is rated in fair to good condition dependent upon annual precipitation (Patterson, 1952). Riparian and wet meadow areas, which are particularly important to young birds, are limited and may be a limiting factor to the population. Sagebrush is available in all areas for winter forage and cover. The population trend is static with yearly flucuations (UDWR, 1979).

c. Threatened and Endangered Species

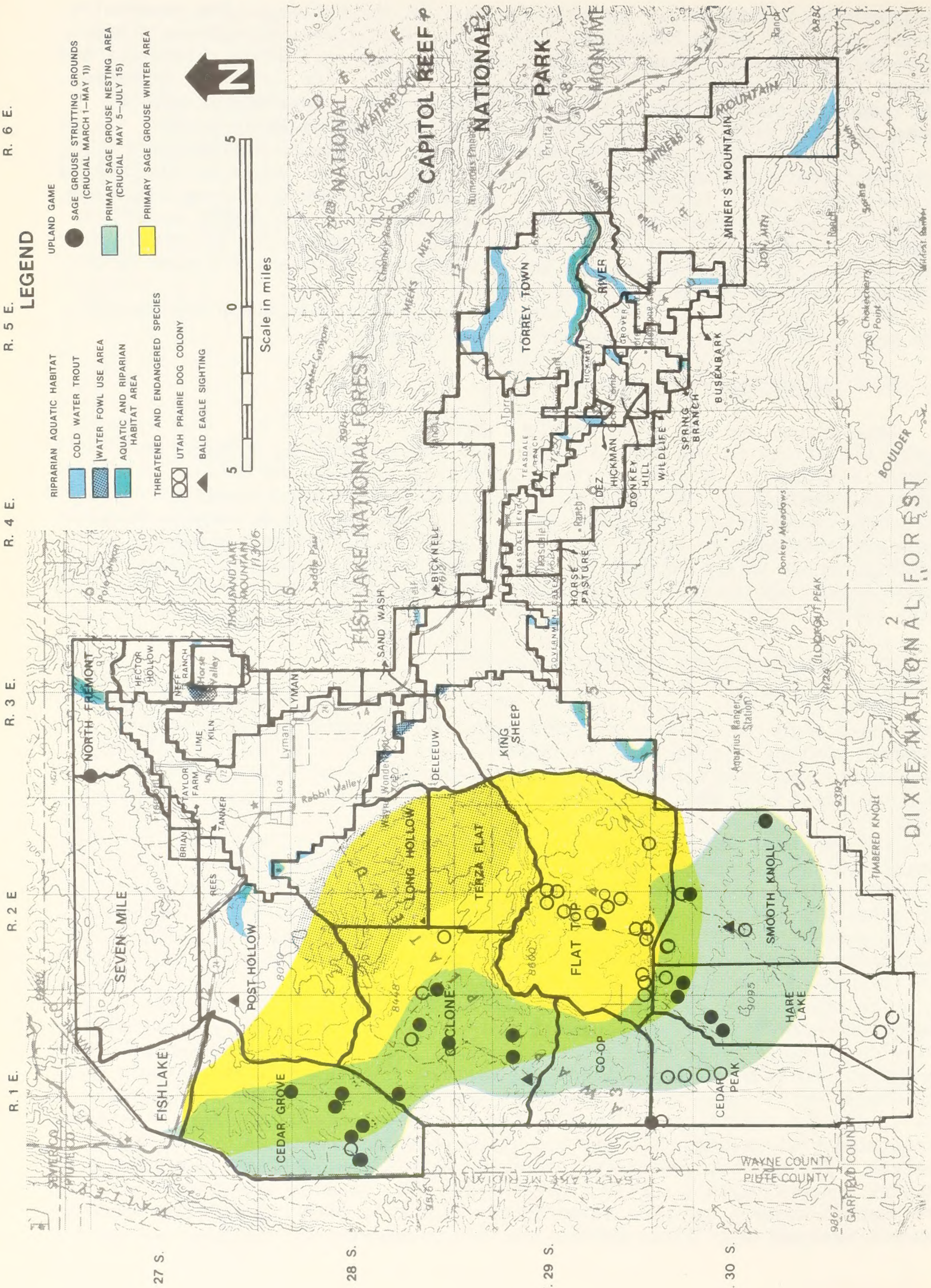
Three officially listed species inhabit the planning unit. The endangered bald eagle is a winter resident, generally inhabiting the area from November through late March or early April. Fish and waterfowl are the main food source, but small mammals and carrion provide a secondary source. No roosting areas have been identified. Recent sightings are shown in Figure 2-23.

The American peregrine falcon, an endangered species, has been known to inhabit the area, but no sightings have been made in recent years.

The endangered Utah prairie dog is also found in the planning unit. Approximately twenty-four active towns exist, primarily on the Awapa Plateau, (see Figure 2-23). Principal food items are grass and forbs. The limiting factor for prairie dogs is the lack of succulent spring forage in swales where moisture is concentrated (Crocker-Bedford, 1978).

The prairie dog was poisoned in the planning unit as late as 1965. Numbers were drastically reduced and most colonies were entirely eliminated. After cessation of poisoning and establishment as an endangered species, this animal has re-established on the Awapa Plateau, slowly at first and more rapidly recently. The upward trend was somewhat curtailed the past 6 years due to drought conditions. The UDWR has transplanted and continues to transplant some prairie dogs from private lands to former colonies on the Awapa Plateau. The BLM has consulted informally with the U.S. Fish and Wildlife Service concerning this species (see Chapter 9). No area of critical environmental concern has been established. The U.S. Fish and Wildlife Service has not designated critical habitat for this species.

DUMMY FIGURE 2-23



HABITAT AND RANGE FOR SOME SPECIES OTHER THAN BIG GAME

FIGURE 2-23

d. Wild and Free-Roaming Horses and Burros

No wild and free-roaming horses or burros (or range inhabited by wild horses or burros on December 15, 1971) are found in the planning unit.

e. Fish

Rainbow, cutthroat, brown, and brook trout are the only gamefish in waters on public land in the planning unit. Table 2-22 gives fishery stream data, and Figure 2-23 shows locations on the planning unit. Figure 2-24 contains typical examples of the various streambank conditions referred to in Table 2-22. Only the Fremont River, Riley Creek, Pine Creek, Road Creek, Fish Creek, and Mill Meadow Reservoir presently support significant game fish populations. Of approximately 23 miles of streambank bordering trout waters on public land, all except 0.50 miles are accessible to livestock. Approximately 10 percent of Mill Meadow Reservoir is located on public land administered by BLM, with the balance on U.S. Forest Service lands.

Some waters support endemic non-game fish such as suckers, sculpin, and dace. No threatened or endangered fish occur on the planning unit.

Continuous grazing from May to October each year on public land on Road Creek, Riley Creek, Pine Creek, Fish Creek, and Fremont River has removed nearly all willow and cottonwood saplings and destroyed the shade canopy. Lack of wintering habitat, cover, and low streamflow limit the trout population in the planning unit to somewhat less than could otherwise be expected (May, et al., 1978-1979). However, about 4 miles of Fremont River in the River Allotment has received light grazing use and is in fair to good condition. Limiting factors to productive aquatic-riparian and fisheries habitat and populations are vegetation canopy removal, streambank trampling, soil erosion, and streambed sedimentation. The shoreline and dam of Mill Meadow Reservoir on BLM administered lands are devoid of riparian vegetation due to extreme fluctuations of water levels.

f. Other Animals

Many other game and non-game birds and mammals are found within the planning unit. Big game species include black bear and mountain lion (cougar), in limited numbers and at static population levels. Jackrabbits, cottontail rabbits, small carnivores, and aquatic furbearers are typical mammals for the area. Mourning doves, chuckar partridge, and blue grouse are other abundant upland game bird species. Non-game birds are represented by at least 13 species of shorebirds and 141 species of songbirds, waterfowl, and raptors.

Reptiles are found unit-wide and amphibians are found in the riparian areas along the Fremont River, its tributaries, and in reservoirs.

8. Archaeological Resources

Forty-one archaeological sites have been recorded within the boundaries of the Parker Mountain Planning Unit: 23 on BLM-managed public land, eleven on private land, and seven on state land. Three of these sites appear to be eligible for nomination to the National Register of Historic Places. Two of them are administered by the BLM; the other is on private land.

The only prehistoric group known to have inhabited this area is the San Rafael variant of the Fremont Indian culture. The San Rafael Fremont, dating from approximately 700-1200 A.D., are known for their crushed-basalt and

TABLE 2-22

Fisheries Stream Data

Stream Name	Allotment	Miles Accessible to Livestock	Trout Habitat Condition[a]	Miles of Habitat (Approx.)[b]	Potential Trout Habitat	Fish Species Known to Occur[c]	Pool Riffle Ratio	Ungulate Damage[d]	Comments
Fremont R	River Deleeuw	4.25 1	Good	4.25	Excellent	RT,BnT,CT,MS	0.89:1	Some	Ungulate damage is slight
Fremont R	Hickman	1	High Fair	1	Good	BnT,MS	___	Yes	Ungulate damage heavy
Fremont R	North Fremont	1.5	Low Fair	1.5	Good	RT	___	Yes	Ungulate damage evident
Road Creek	Long Hollow	0.25	Poor	0.25	Good	RT	___	Yes	Road Creek is heavily grazed
Riley Creek	Post Hollow	1	High Fair	1.25	Good	RT,MS	0.69:1	Some	Upper half of creek inaccessible to livestock.
Pine Creek	King Sheep	2	Low Fair	2	Excellent	RT,BrT	___	Yes	Grazed by permitted animals and trailing animals.
Fish Creek	Donkey Hill	0.15	Poor	0.15	Good	Brt	___	Yes	Inconsistent water supply
	Grover	0.15	Poor	0.15	Good	Brt	1.15:1	None	Inconsistent water supply
	Spring Branch	0.25	Poor	0.25	Good	Brt	___	Yes	Inconsistent water supply
TOTAL		11.55		11.8					

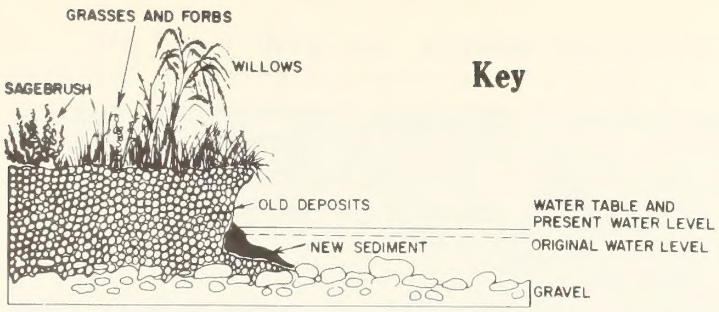
Source: BLM Henry Mountain Resource Area Stream Survey Files, 1977; UDWR, 1978-79.

Notes: [a] Refers to Figure 2-25, derived from "Guidelines for Management of Trout Habitat in Wisconsin," 1967.

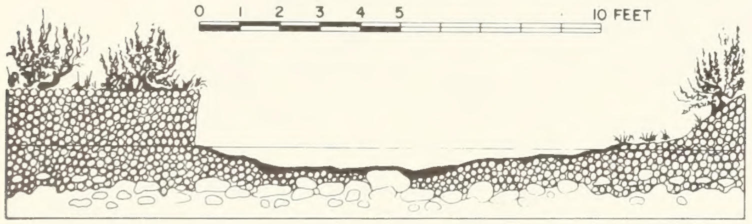
[b] On public land administered by BLM.

[c] Species Key: BnT - Brown trout; BrT - Brook Trout; RT - Rainbow Trout; CT - Cutthroat trout; MS - mountain sucker.

[d] Refers to the amount of damage caused to streambanks by trampling and grazing primarily from domestic livestock and some big game.

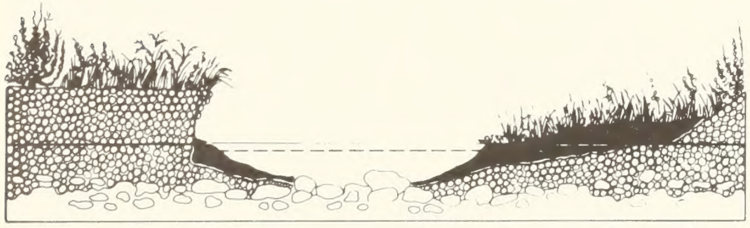


Key



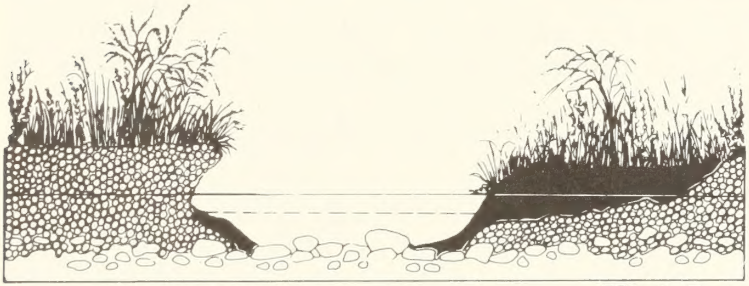
Poor

Channel wide, shallow and easily warmed by full exposure to solar radiation. Low bank stability with active bank erosion. Riparian vegetation quite limited, sagebrush to the streambank in many areas. Low riparian water table. Bottom sediment approaches 60%+, smothering gravel deposits. Habitat for aquatic or terrestrial wildlife essentially nil. Similar to conditions of heavy grazing impact.



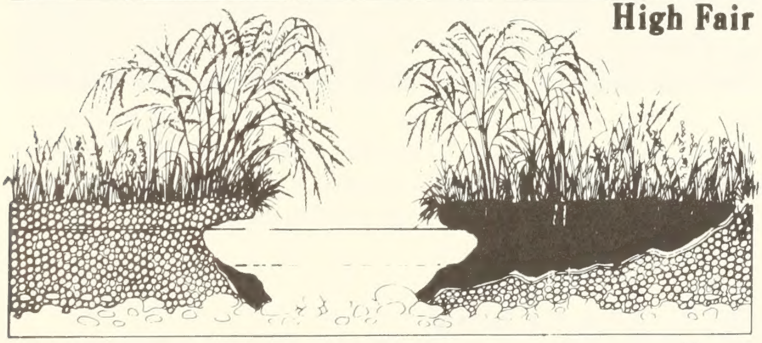
Low Fair

Riparian vegetation begins to form on silted bars and banks forming a sediment trap which builds up banks and begins to confine the channel. Water surface still fully exposed to warming, but level begins to rise, forcing out riparian sagebrush and bringing back riparian vegetation. As flow becomes confined, sediment is reduced to 40-60%. Conditions similar to those of moderate grazing pressure. Willow growth depressed. Habitat value to aquatic or terrestrial wildlife is still quite limited.



High Fair

Semi-confined by development of riparian vegetation with dense root mass. Banks stabilized by vegetation and bottom sediment reduced to approximately 20-30%. Rising water table is reducing sagebrush in favor or riparian grass shrubs. Stream continues deepening as bank resistance to erosion increases. Pools and riffles for fisheries are improving as more gravel is exposed. Representative of light grazing pressure.



Adapted from "Guidelines for Management of Trout Habitat in Wisconsin," 1967

Good

Confined-deep channel, elevated riparian water table, fully developed vegetation in riparian zone stabilizing cutbanks, deposited sediment and over hanging banks. Physical cover highly developed for both aquatic and terrestrial organisms. Bottom gravels clean with only 10-15% sedimentation. Reduced water temperatures due to 40-60% shading of surface area. Similar to conditions of very limited grazing or protected areas.

EXAMPLES OF TROUT HABITAT CONDITIONS

FIGURE 2-24

quartz-tempered pottery, wetland and dryland masonry, and slab-lined pit structures (Marwitt, 1970). Less than half of the recorded sites in the area were positively identified as being of Fremont origin. The remainder may simply be lacking in diagnostic artifacts, or they may be indicative of another group of people. It is known that Shoshonean-speaking people (Ute, Paiute, Shoshone) were the sole inhabitants of Utah at the time of white contact (Hauck, 1977).

9. Visual Resources

The planning unit contains two distinctive types of landscape character. The Awapa Plateau in the western portion of the unit is characterized by gently rolling hills (see Figure 2-2) that are colored by the muted grays and greens of desert shrub. In the eastern portion of the unit, landform consists of steep redrock canyons carved by the Fremont River and its tributaries. Vegetation varies from riparian to pinyon-juniper, resulting in variation in color and texture.

Evidence of livestock grazing is common throughout the planning unit in the form of fences, reservoirs and vegetation manipulation.

Of five possible visual resource management (VRM) classes, three have been identified within the planning unit. Figures 2-25 through 2-27 show the three classes in the planning unit. Locations are shown on Figure 2-28. Because the management objectives for each VRM class allow a different degree of modification of the landscape, each class must be considered separately in determining whether or not a modification would result in a visual impact. Methodology for determining VRM classes, and the management objectives for each class, are described in Appendix II-10.

10. Recreation

The planning unit provides opportunities for hunting of deer, antelope, elk, and sage grouse. An estimated 14,848 hunter days are provided by the planning unit. The distribution of hunter days by species hunted is shown on Table 2-23.

Trout fishing occurs along the Fremont River, Road Creek, Fish Creek, Riley Creek, Pine Creek, and at Mill Meadow Reservoir. The planning unit provides an estimated 3,000 fisherman days annually (BLM Parker Mountain Planning Documents, 1978a).

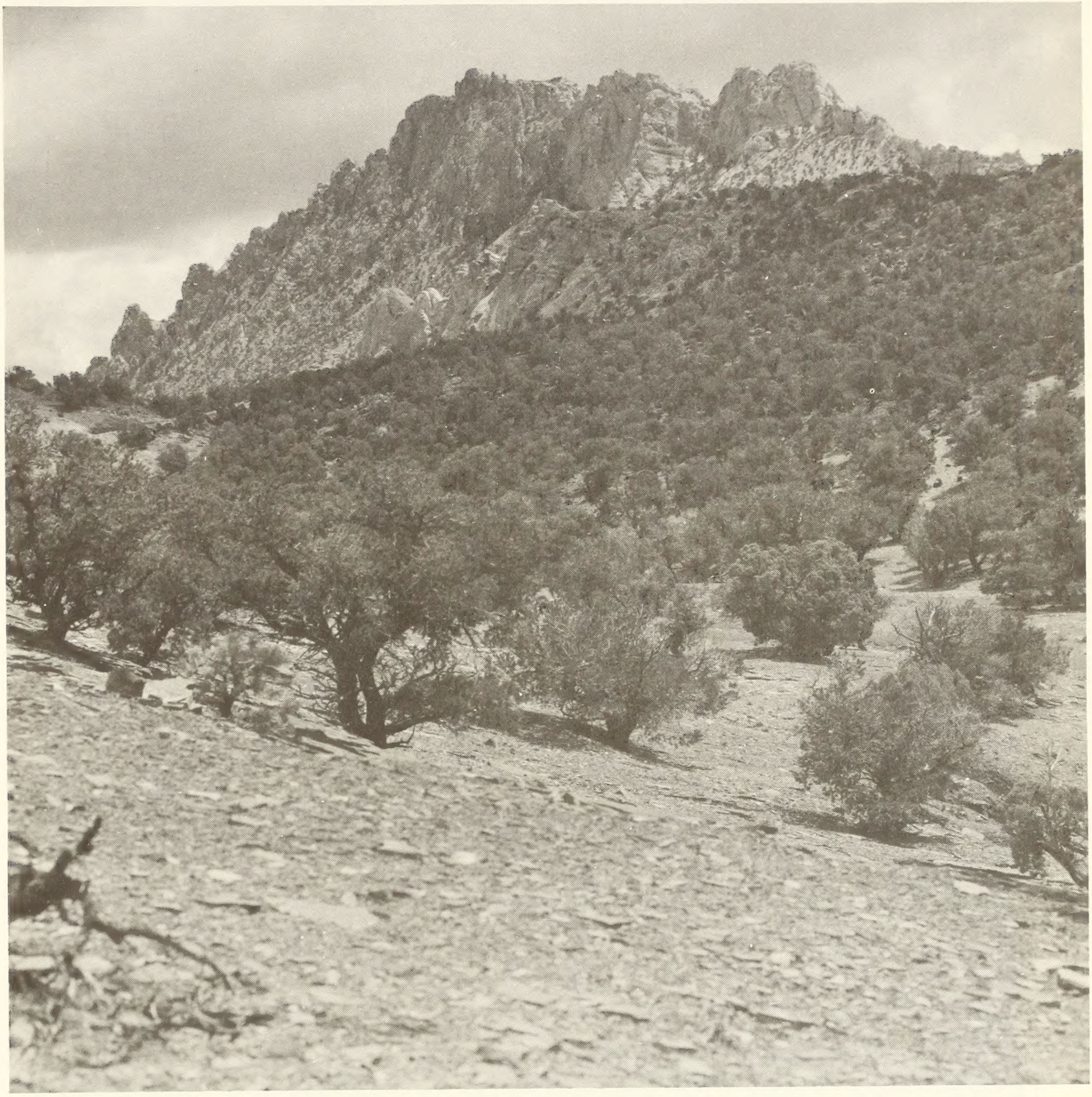
11. Livestock Grazing

All 99 livestock operators on the planning unit use public lands administered by BLM in conjunction with other lands such as U.S. Forest Service, National Park Service, state, and private. Forty-five of the livestock operators have permits to graze in two or more of the allotments in the planning unit. Table 2-24 shows how livestock grazing use is distributed.

a. Grazing Operations

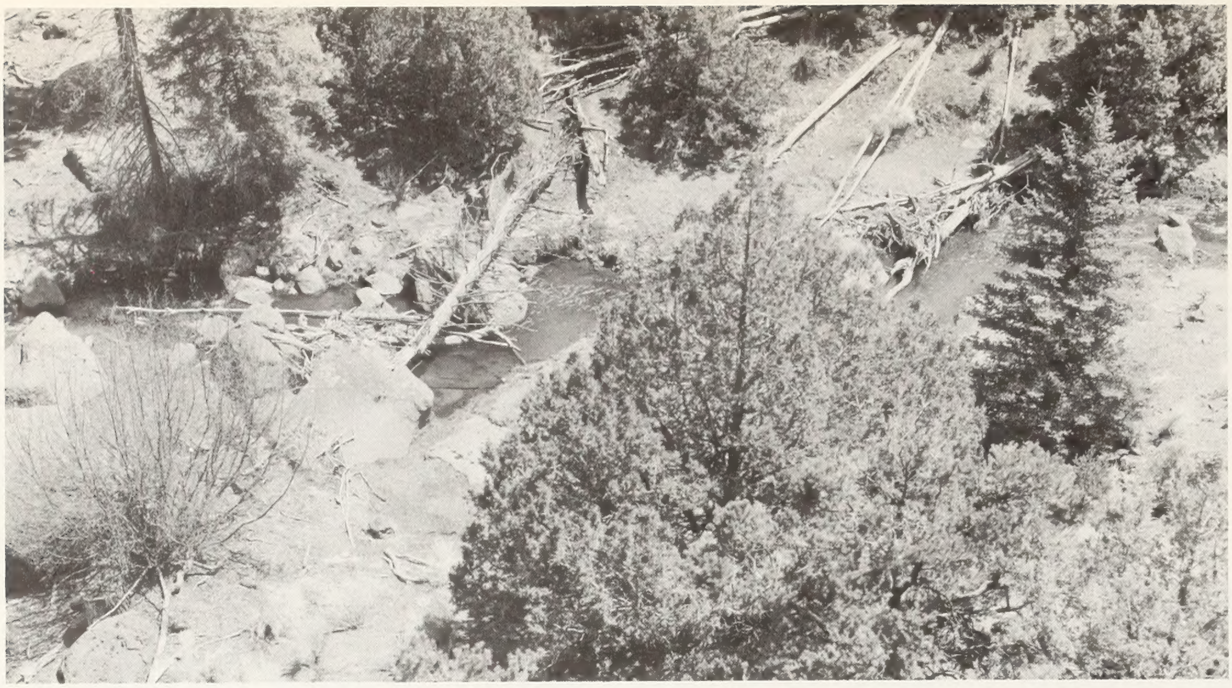
There are two different types of livestock operations in the planning unit: cow-calf and sheep.

Cow-calf operations consist of a basic herd of cows, each cow with a young calf, that are grazed on the planning unit during the fall, winter, and spring grazing seasons (September 1 to June 30). Approximately 60 percent of

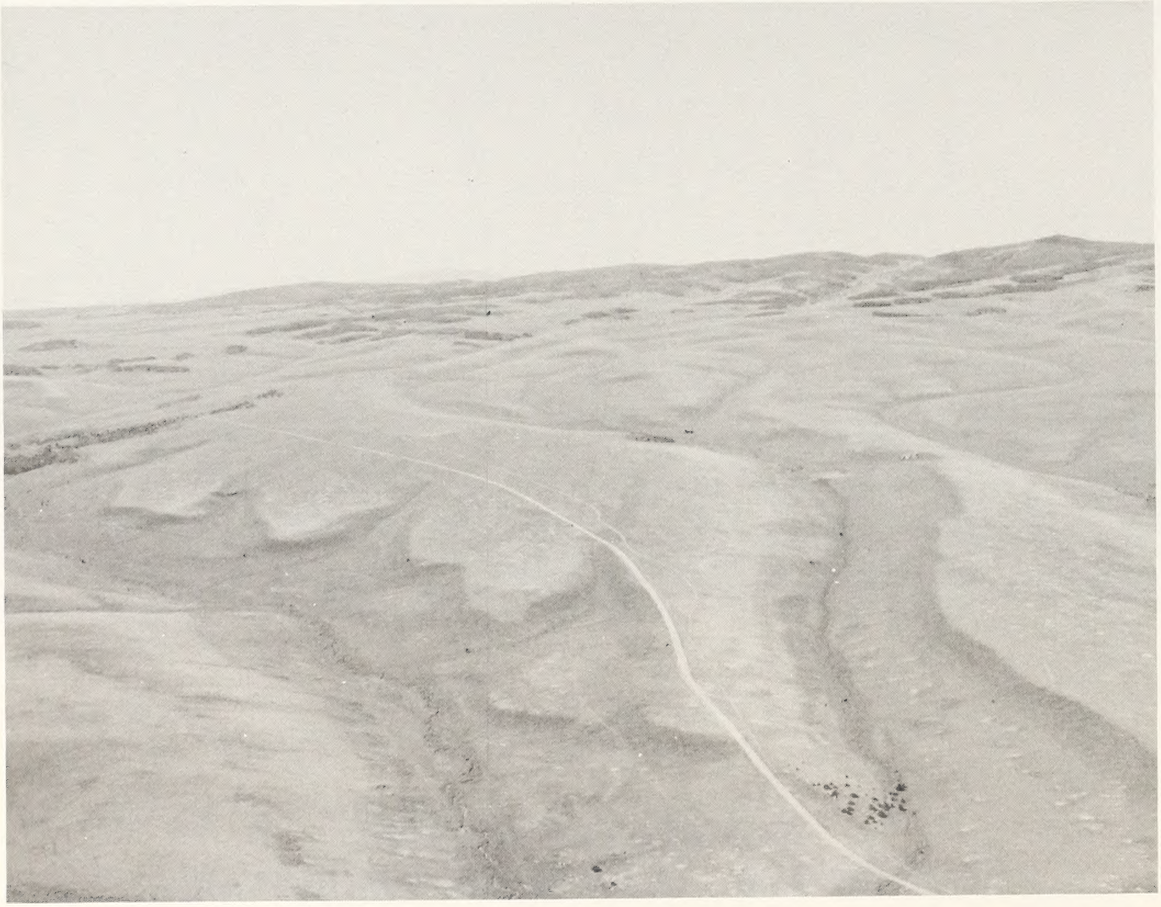


VRM CLASS II SCENERY
(COCKSCOMB - NEAR MINER'S MOUNTAIN)

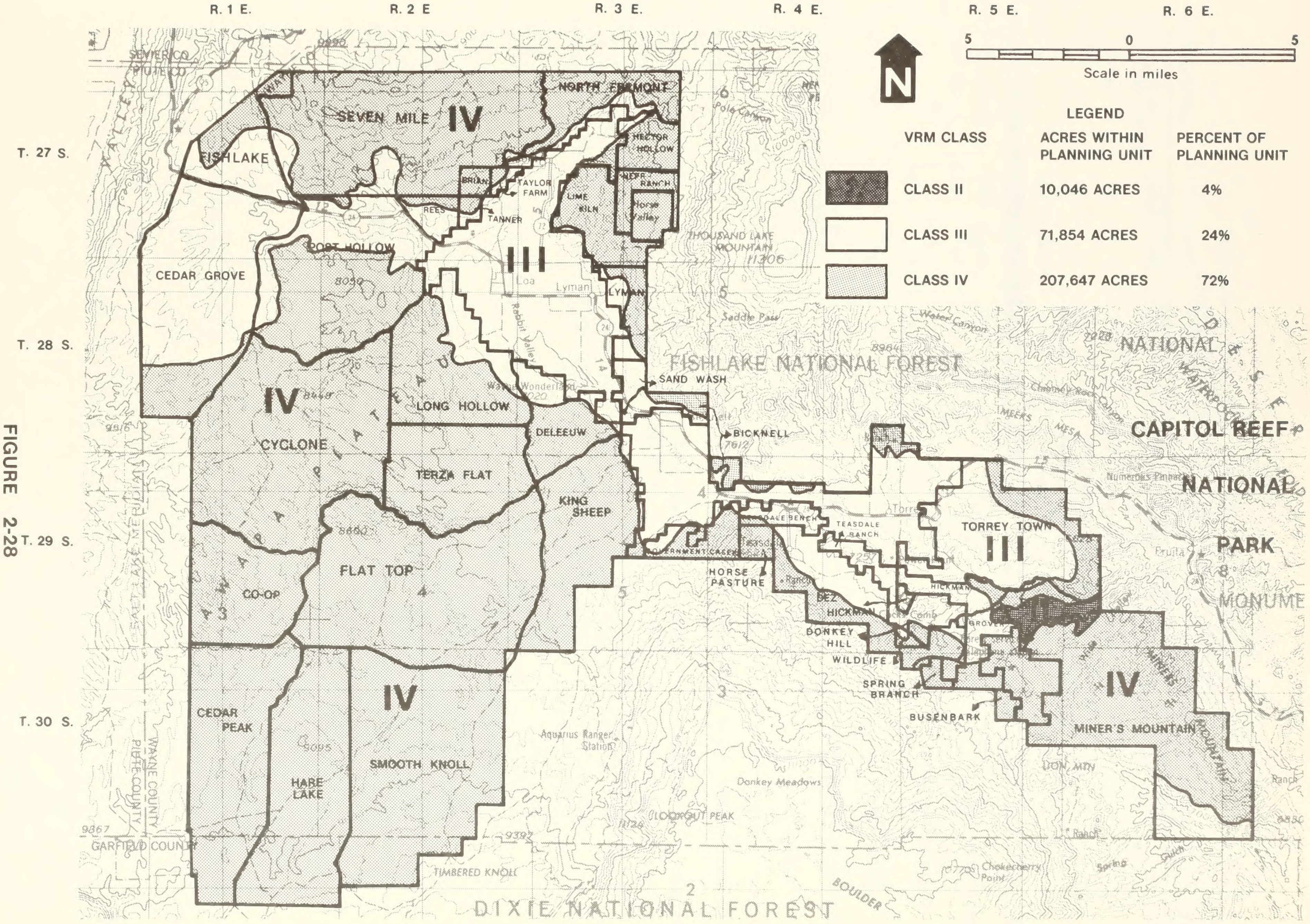
FIGURE 2-25



VRM CLASS III SCENERY
(PINE CREEK)
FIGURE 2-26



VRM CLASS IV SCENERY
(AWAPA PLATEAU)
FIGURE 2-27



LEGEND

VRM CLASS	ACRES WITHIN PLANNING UNIT	PERCENT OF PLANNING UNIT
▓ CLASS II	10,046 ACRES	4%
☐ CLASS III	71,854 ACRES	24%
░ CLASS IV	207,647 ACRES	72%

VISUAL RESOURCE MANAGEMENT (VRM) CLASSES

FIGURE 2-28

TABLE 2-23

Estimated Annual Hunter Use Days Provided By the Parker Mountain Planning Unit

Activity	Total Hunter Days (both inside and outside the planning unit) Supported By Public Land Habitat Within the Parker Mountain Planning Unit[a]	Percent of Hunter Success
Deer Hunting	12,701[b]	44
Antelope Hunting	117[c]	89
Elk Hunting	911[d]	11
Sage Grouse Hunting	1,119	0.94 birds/hunter
Total	14,848	

Source: UDWR, 1978 and 1979 (big game) and 1976 (upland game).

Notes: [a] 1 hunter day = 12 hours. Deer and elk hunter days are based on 4.0 hunter days per hunter. Antelope hunter days are based on 1.74 hunter days per hunter. Sage grouse hunter days are based on 1.85 hunter days per hunter. Deer and sage grouse hunter days are a 5-year average (1972-1976). Elk and antelope hunter days are 1978 figures.

[b] Of the total deer hunter days, 4,322 occur on public land within the Parker Mountain Planning Unit.

[c] Of the total antelope hunter days, 100 occur on public lands within the Parker Mountain Planning Unit.

[d] None of the total elk hunter days occur on public land within the Parker Mountain Planning Unit.

TABLE 2-24

Livestock Grazing Use, Parker Mountain Planning Unit

Proposed Action Components and Allotments	Land Status (Acres)			Season of Use	Number of Livestock Operators	Current Livestock Allocation (AUMs)	Number and Kind of Livestock[a]		Current Livestock Use[b]	
	Public	State	Private				Cattle	Sheep	AUMs	Percent of Allocation
NO LIVESTOCK GRAZING										
Dez Hickman	155	0	0	--	0	0	0	0	0	--
Wildlife	320	0	0	--	0	0	0	0	0	--
Subtotal	475	0	0	--	0	0	0	0	0	--
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)										
Bicknell Spring	n/a[c]	n/a	n/a	5/16-6/30	9	1,029	1,019	0	878	85
Cedar Peak	12,351	589	0	5/16-6/30 9/11-10/25	6	655	0	1,289	506	77
Hare Lake	11,453	1,229	639	5/16-6/30 9/16-10/25	4	545	0	1,908	481	88
Smooth Knoll	18,761	920	0	5/16-6/30 9/16-10/31	4	1,053	0	1,510	590	56
Bicknell Winter	n/a	n/a	n/a	4/16-5/15 9/1-3/31	13	1,306	843	0	776	59
Flat Top	19,256	2,790	0	5/16-6/30 11/1-1/31	6	739	0	1,150	418	57
King Sheep	9,341	0	0	11/1-2/28	2	161	0	145	53	33
Cedar Grove	11,755	1,280	0	5/11-6/30 10/1-1/15	11	1,134	308	1,980	418	37
Cyclone Co-op	n/a	n/a	n/a	5/1-5/31	17	622	618	0	524	84
Co-op	7,160	120	0	5/16-6/30	9	229	0	929	182	79
Cyclone	17,603	1,957	0	5/16-6/30 10/1-11/15	5	542	0	895	527	97
Fishlake	2,880	1,200	0	6/1-6/25 10/21-11/10	1	162	0	1,800	162	100
Hector Hollow	2,002	0	0	3/11-4/30 5/11-6/10 12/1-1/31	3	138	109	100	56	41
Lyman	2,037	0	0	12/1-3/15	2	125	37	0	89	71
Post Hollow	11,715	1,911	0	10/15-3/31	13	499	20	1,345	293	59
Subtotal	126,314	11,996	639	--	105	8,939	2,954	13,051	5,953	67
IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring)										
Seven Mile	18,639	1,274	0	5/1-6/30	18	733	723	0	436	59
Brian	640	0	0	12/1-3/31	2	33	27	50	13	39
Rees	1,080	0	0	3/1-4/30	1	32	16	0	0	0
Tanner	400	0	0	--	0	0	0	0	0	0
Taylor Farm	400	0	0	12/1-1/31	2	18	0	100	7	39
Subtotal	21,159	1,274	0	--	23	816	766	150	456	56

TABLE 2-24 (concluded)

Proposed Action Components and Allotments	Land Status (Acres)			Season of Use	Number of Livestock Operators	Current Livestock Allocation (AUMs)	Number and Kind of Livestock[a]		Current Livestock Use[b]	
	Public	State	Private				Cattle	Sheep	AUMs	Percent of Allocation
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter)										
Bicknell	1,819	0	0	11/1-3/31	3	150	19	484	75	50
Lime Kiln	2,960	0	320	11/1-2/28	6	354	7	0	229	65
Loa Winter	n/a	n/a	n/a	10/16-3/31	2	254	96	0	133	52
Deleeuw	3,238	625	0	5/21-5/31 7/1-1/30	1	168	0	350	118	70
Long Hollow	8,064	640	0	1/16-3/20	4	332	0	1,200	245	74
Terza Flat	7,278	1,312	0	2/1-3/15	5	321	0	1,150	234	73
Miner's Mountain	15,683	2,000	0	10/16-5/31	4	211	160	0	144	68
Neff Ranch	1,646	0	1,174	1/6-2/25	2	105	0	300	105	100
North Fremont	3,351	642	0	11/1-4/30	2	323	0	450	216	67
Sand Wash	778	0	0	2/1-2/25	1	54	0	350	0	0
Torrey Town	9,477	66	160	10/16-5/31	5	500	112	0	59	12
Subtotal	54,294	5,285	1,654	--	35	2,772	394	4,284	1,558	56
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Winter)										
Busenbark	356	0	0	12/1-12/31	1	30	0	150	20	67
Donkey Hill	1,367	0	0	10/16-3/15	1	25	10	0	25	100
Government Creek	1,842	0	0	12/1-2/28	1	91	0	147	87	96
Grover	1,582	0	0	11/1-5/31	2	120	17	0	17	14
Horse Pasture	640	0	0	8/16-4/15	1	14	2	0	8	57
River	2,029	0	160	10/16-4/15	2	75	13	0	60	80
Spring Branch	492	80	0	11/1-4/15	1	11	2	0	6	55
Teasdale Bench	1,200	0	0	1/1-1/31	1	20	0	100	20	100
Teasdale Ranch	1,035	0	0	10/16-4/15	3	80	20	0	71	89
Subtotal	10,543	80	160	--	13	466	64	397	314	67
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter)										
Hickman	272	0	0	6/1-7/31	1	4	2	0	4	100
Subtotal	272	0	0	--	1	4	2	0	4	100
GRAND TOTAL	213,057	18,635	2,453	--	177[d]	12,997	4,180	17,882	8,285	64

Source: BLM Parker Mountain Planning Documents, 1978a.

Notes: [a] Number may vary from year to year. Livestock grazing allocation (AUMs) remain constant.

[b] Based on the average authorized active (licensed) use for the 3 years 1975-77.

[c] n/a = not applicable, as information for these allotments is included in the sub-allotments listed thereunder.

[d] There are 99 livestock operators in the planning unit. The total of 177 reflects duplication in livestoack operators who graze their livestock in more than one allotment.

the cattle use the planning unit during the spring grazing season (April 15 to June 30). Cows generally give birth to calves on private farms and ranches during the early spring, and are then trailed, with their calves, to the planning unit for the grazing season. Most cow-calf herds are then moved to U.S. Forest Service lands or to the State Land Block where they range for the summer, until they return to the planning unit or to private land in the fall. All except three of the cattle operators of the unit run fewer than 100 head of cattle.

All but two of the sheep operators of the unit run fewer than 500 head of sheep. In the larger allotments, the operators combine their herds into one cooperative herd of a larger size. Sheep grazing on the planning unit is normally fairly well dispersed through fall, winter, and spring (September 1 to June 30), with the most use during the winter. Most of the operators summer their sheep on adjacent U.S. Forest Service land.

b. Types of Management

Cattle on allotments under continuous-seasonal grazing graze with little control on their movements. Some operators place salt on ridges or do range riding to move their cattle into areas that they might not otherwise graze.

Sheep on allotments under continuous-seasonal grazing are herded and generally use all parts of the allotments, especially in winter when there is snow available as a source of water. These allotments are generally not cross-fenced since the sheep are moved about on the allotment by the herder.

c. Production Characteristics

Calving is generally from February through April on private farms or the allotments. Calves weigh between 120 and 200 pounds when they are taken to the summer ranges. When cattle are moved off the summer ranges at the end of October, calves are weaned and sold at a weight between 350 and 430 pounds.

Lambing is in March or early April. The lambs are usually cut out of the herd and sold in October or November when they weigh between 75 and 85 pounds at that time.

12. Wilderness

All roadless areas, 5,000 acres or larger (roadless inventory units), of public land administered by BLM are being inventoried for wilderness values. Appendix II-11 summarizes BLM's wilderness review process.

Thirteen roadless inventory units, listed on Table 2-25 and shown on Figure 2-29, have been identified within the planning unit. Two roadless units were reviewed for wilderness values in an accelerated wilderness inventory as a result of the proposed Intermountain Power Project. This inventory, completed in March, 1979, determined that the two roadless units did not have wilderness character and they have been excluded from further wilderness review. The initial inventory phase of the wilderness review process has been completed on the other eleven roadless units. The initial inventory found that ten of the eleven units "obviously and clearly" lack wilderness character and recommends that they be excluded from further wilderness review. Only one unit in the initial inventory possibly had wilderness character and it is recommended for the intensive inventory phase of the wilderness review process. Until a final decision, in August, 1979, all eleven units--approximately 129,060 acres of public land and encompassing portions of 19 allot-

TABLE 2-25

Roadless Inventory Units

Unit	Public Land Acreage	Inventory Recommendation[a]	Current Management Status[b]	Sources[c]
UT-050-210	18,250	1	A	1
UT-050-211	5,790	1	A	1
UT-050-212	9,400	2	B	2
UT-050-213	7,400	2	B	2
UT-050-214	9,120	2	B	2
UT-050-215	6,240	2	B	2
UT-050-216	7,800	2	B	2
UT-050-217	25,840	2	B	2
UT-050-218	8,440	2	B	2
UT-050-219	17,000	2	B	2
UT-050-220	10,200	2	B	2
UT-050-221	19,720	3	B	2
UT-050-222	7,900	2	B	2

Notes: [a] Inventory Recommendation:

1--The unit has no wilderness character and has been excluded from further wilderness inventory.

2--The unit "obviously and clearly" lacks wilderness character. It is recommended for exclusion from further wilderness inventory.

3--The unit may possibly have wilderness character. The unit is recommended for more intensive inventory.

[b] Current Management Status:

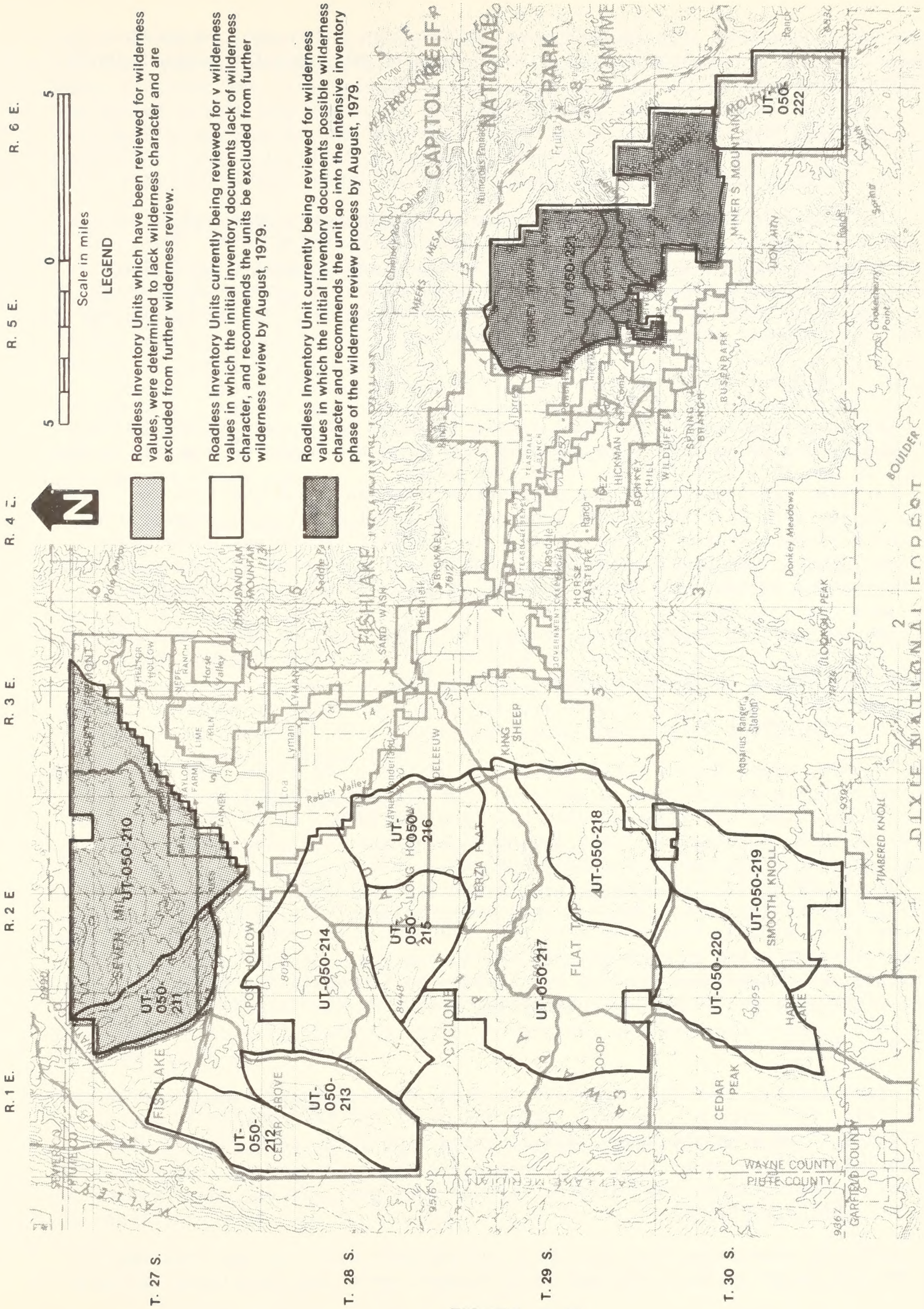
A--The unit is excluded from further wilderness review, and is no longer subject to interim management protection.

B--The recommendaton is presently undergoing public review. Until a decision is finalized in August, 1979, the unit is subject to interim management protection.

[c] Sources:

1--IPP Accelerated Wilderness Inventory, March, 1979a.

2--Initial Phase, BLM Initial Wilderness Inventory, March, 1979b.



LEGEND

▨ Roadless Inventory Units which have been reviewed for wilderness values, were determined to lack wilderness character and are excluded from further wilderness review.

☐ Roadless Inventory Units currently being reviewed for v wilderness values in which the initial inventory documents lack of wilderness character, and recommends the units be excluded from further wilderness review by August, 1979.

■ Roadless Inventory Unit currently being reviewed for wilderness values in which the initial inventory documents possible wilderness character and recommends the unit go into the intensive inventory phase of the wilderness review process by August, 1979.

ROADLESS INVENTORY UNITS

FIGURE 2-29

ments--are subject to interim management protection. They will be managed in a manner that will not impair any suitability they may have for Congressional wilderness designation.

13. Economics

a. General Characteristics

The people of Wayne County are economically dependent upon having access to and using the natural resources in and near the planning unit. The livestock industry and the production of livestock forage on public lands has traditionally been a major element in the Wayne County economy. Many livestock operators work at other jobs, however, and the livestock operation may or may not be their primary source of income.

b. Income

The annual per capita personal income in Wayne County was $2,423.00 in 1971 and $4,053.00 in 1976--considerably less than the State of Utah which was $3,427.00 and $5,350.00 for the respective years.

In 1976, earnings (labor and proprietor's income) from the farm sector in Wayne County were $532,000.00 (12.1 percent of total earnings), representing the third-largest sector in the county. The largest sector was government (Federal, State, and Local) with $1,865,000.00 (42.6 percent of total earnings), and the second-largest was retail trade with $555,000.00 (12.7 percent of total).

The current estimated annual value of big game hunting (deer, antelope, and elk) within the planning unit is $376,800.00. Of this, the net direct and indirect income to the state economy is $165,792.00.

c. Employment

In 1976, Wayne County total employment was 705. Of these, 194 (28 percent) were employed in agriculture, a decrease from 206 (35 percent) in 1971. By way of comparison, the State of Utah had farm employment of 21,361 in 1971 and 20,544 in 1976 representing 5 and 4 percent of state total employment for the respective years (Bureau of Economic Analysis, 1978).

Of 104 Wayne County farmers, 16 (15 percent), worked from 1 to 99 days off the farm during 1974. Twenty-one others claimed from 100 to 199 workdays off the farm, with 21 reporting more than 200 days. The remaining 46 farmers (44 percent) reported no workdays off the farm (Census of Agriculture, 1974).

It is estimated that hunting and fishing on BLM-administered land add about eight jobs to the Wayne County economy (Parker Mountain PAA, 1978a).

d. Taxes

Wayne County, like most counties in Utah, depends heavily on property and sales taxes for revenue. In 1978, $228,057.00 of the tax revenue in Wayne County came from property taxes, $33,316 came from local sales taxes (Utah Foundation, 1979).

e. Ranch Economics

Ranching operations that use the planning unit were divided into small, medium, and large scales. Average ranch budgets were then developed for each scale. These budgets, displayed in Table 2-26, show the revenues and expenses for the "average ranch" within each scale and provide baseline data for subsequent calculations. The assumption inherent in this approach is that individual operations within any one scale are sufficiently represented so that any conclusions applied to the "average ranch" scale would also apply to the majority of its individual operations. However, it should be noted that wide differences may occur among individual operators.

Small-Scale Operations

Of the 99 livestock operators in the Parker Mountain Planning Unit, about 37 percent are in the small-scale category. These ranches have an average of 61 animal units (AU) and forage requirements of about 732 AUMs annually. All of the small operators also graze livestock on other public lands--Dixie National Forest, Fishlake National Forest, State land, or other public lands.

Table 2-26 includes data from a typical small-scale ranch budget. The average gross income received is estimated at $308.75 per AU with $200.12 of cash expenses per AU. The operator's net annual ranch income is $70.35 per AU and $4,268.00 per ranch. Typically, these ranchers supplement this income with an off-ranch job.

Medium-Scale Operations

About 22 percent of the planning unit livestock operators operate medium-scale ranches. Ranchers in the medium scale run from 90 to 135 AUMs and average 105 animal units. This is equivalent to an average of 1,260 AUMs annually. In addition, all of the medium-sized operators also obtain forage from other public lands.

These operators have an average annual gross income of about $353.28 and net ranch income of $43.51 per AU or $4,554.00 per ranch (see Table 2-26). Some of these operators also supplement ranch income with off-farm labor by one or more members of the family.

Large-Scale Operations

Approximately 40 percent of the operators in the planning unit are in the large category. The average large-scale rancher runs 264 AUs, requiring about 3,168 AUMs annually. As with the other size categories, all of the large operators also depend on other BLM, Forest, or state lands for forage during the year.

Table 2-26 includes data on the large-scale typical ranch budget. Annual gross income is approximately $252.01 per AU and net ranch income of $56.43 per AU or $14,898 per ranch. Large operators are typically more capable of diversifying to meet changing market conditions and are more likely to be fulltime operators.

f. Economic Summary

There are two basic categories of economic concerns to local ranchers: (1) the annual returns to their investments of land, labor, and capital (known as income); and (2) the long-term capital value of the ranch property (known as wealth).

TABLE 2-26

Average Costs and Returns Per Animal Unit[a] (Cows and Ewes Only)

Item	Small (62 AUs)	Medium (105 AUs)	Large (264 AUs)
Returns			
Cull cows	15.82	12.36	24.07
Cull bulls	11.04	1.94	1.13
Yearlings	120.67	116.94	112.36
Calves	44.42	77.39	35.57
Cull sheep	0.99	1.08	1.19
Lambs	45.73	100.28	62.56
Wool	11.40	9.61	15.13
Other	58.68	33.68	--
Subtotal	308.75	353.28	252.01
Expenses			
Land rent	0.77	9.55	3.47
Supplemental feed	53.45	17.87	38.78
Veterinary	6.80	7.01	3.15
Livestock purchased	2.32	17.39	1.64
Insurance	11.13	12.11	6.15
Marketing	2.69	1.61	0.45
Transportation	5.16	0.40	1.61
Hired labor	4.40	22.57	21.06
Contract labor	0.93	1.27	4.35
Taxes	16.01	8.73	7.40
Seed	5.34	5.44	3.10
Fertilizer	4.53	8.27	3.55
Fuel and lubricants	32.16	39.25	21.36
Repairs	15.80	18.32	11.72
Utilities	9.59	11.06	3.02
Grazing fees	11.59	5.20	11.44
Supplies	11.79	2.23	4.85
Other	5.66	5.29	5.02
Subtotal	200.12	193.57	152.21
Net Cash Income	108.63	159.71	100.80

TABLE 2-26 (concluded)

Item	Small (62 AUs)	Medium (105 AUs)	Large (264 AUs)
Changes in Inventory	-48.11	-121.02	-46.15
Ranch perquisities	9.83	4.82	2.69
Net ranch income (Returns to fixed factors--operator labor and management, and all capital.)	$70.35	$43.51	$57.34

Source: Data computed for nine livestock operators using the Planning Unit.

Notes: [a] One animal unit (AU) refers to the maintainance of one animal for one year.

Annual Returns

The factors which affect a livestock operator's potential annual returns are: (1) price per unit weight at sale; (2) weight per animal; (3) number of animals; and (4) costs of raising the animal to marketability. BLM management has the potential of affecting all but the price per unit weight.

Capital Values

Changes in allocated AUMs can affect the overall capital value of ranch property. Lending institutions sometimes recognize BLM permits as part of a ranch's collateral in securing loans (commonly referred to as the capitalized value of the permit). Any change in permitted use has the potential of affecting the livestock operator's ability to secure a loan and the overall capital value of his property.

BLM allocated AUMs may be transferred from one operator to another. The dollar value given by one operator (buyer) to induce a present permit holder (seller) to transfer his permit is known as the "permit value" of an AUM. This "permit value" may have a significant bearing on the rancher's wealth position. The current permit value of an AUM on the planning unit is estimated at about $22.50 per AUM (Bagley, 1979).

14. Sociology

a. Population

During the period 1960 to 1970, Wayne County experienced slightly more than a 14 percent decline in population. During the period 1970 to 1977, the population increased from 1,483 to about 1,800 (a gain of 21 percent), with a population density of 0.6 per square mile (Utah Facts, 1978). There are no urban areas (as classified by the U.S. Census) in Wayne County. About 50 percent of the county's residents live in the communities of Loa and Bicknell, and the remainder are scattered throughout the county. It is estimated that about 75 percent of the county's population lives within the boundaries of the planning unit. Table 2-27 compares changes in population in the county and the State of Utah.

b. Attitudes and Expectations

The Wayne County population is not geographically mobile; 80 percent of the people have lived there for more than 10 years, and most (87 percent) said they would be reluctant to move. Most people (95 percent) feel their county is a friendly place to live, and nearly all (98 percent) said it is a good place to raise a family (Albrecht, 1978).

Working in the out-of-doors or with the areas' natural resources dominates employment in the workforce, and 91 percent of the people think this access to the out-of-doors is an important aspect of their lifestyle. Nearly a fourth, 23 percent, are farmers and another 21 percent are involved in the management of natural resources. Most of the people (67 percent) in the area earn $20,000 or less annually.

Most livestock operators who have permits in the planning unit also live within its boundaries. Other users are recreationists who hunt, fish, camp, gather firewood, and hike. Most other users live outside of Wayne County.

TABLE 2-27

Population Changes in Wayne County

	Wayne County	State of Utah
Year		
1960	1,728	890,627
1970	1,483	1,059,273
1975	[a]	1,205,900
1977 est.	1,800	[a]
Average Annual Growth (percent)		
1960-1970	-14.2	+1.75
1970-1975	[a]	+2.3
1970-1977	+21.2	[a]

Source: U.S. Bureau of Census, 1975; Utah Bureau of Economic and Business Research, 1977.

Note: [a] Figures not available.

Most residents of Wayne County have strong historical ties to the area and to sheep and cattle operations which have existed in the planning unit for the past century. In many cases, operations have remained within one family for two or more generations. The people who use the land are highly interested in the environment, including the land on which the livestock and wildlife graze.

Data gathered by Geertsen, et al., (1975) indicate the Utah public has a limited knowledge of the basis for the BLM's grazing decisions, and the planning system. About 70 percent know very little or nothing about it. While 54 percent of those questioned said they favored or strongly favored land use planning in their county, 51 percent would prefer that local officials do this planning, and only 9 percent said federal officials should do it. A total of 93 percent felt that they, the local residents themselves, should have more say in land use planning.

Strong feelings of powerlessness and dissatisfaction exist among people living in the planning unit with regard to federal programs. Of those interviewed, 68 percent did not favor such programs; they feel that their interests have not been, and probably will not be, considered, and that implementation of the programs will result in closer government supervision and control. A total of 76 percent are unfavorable toward what they believe is federal intervention in local actions.

C. FUTURE ENVIRONMENT WITHOUT THE PROPOSED ACTION

Introduction

This section summarizes the probable future environment of the planning unit if the proposal was not implemented. Two major activities are expected to be leading factors in change on the planning unit. They are: (1) increasing big game populations, and (2) more people using the area for increased hunting. Changes are not expected in air quality, climate, and topography.

Soils

Annual soil loss estimates from BLM watershed studies indicate that there would be very little change in the production capacity of the area in the future. Erosion condition is not expected to change.

Water Resources

Water quantity is expected to remain unchanged. Water quality may decline with increased recreation use of the area.

Vegetation

All measured vegetation parameters--cover, composition, condition, and production--would not be expected to change on 126,789 acres (17 allotments).

On 86,268 acres (26 allotments), vegetation is rated to be in fair or poor condition due primarily to a combination of drought and overstocking. Cover would not change because desirable plant species would be replaced by unpalatable weedy species. Composition of desirable forage and browse plant species would remain low or actually decrease, and forage condition would deteriorate or remain static, but not improve. Perpetuating these conditions would contribute to lowering overall productivity of desirable forage plant species.

Animal Life

There could be unregulated growth of antelope, elk, and deer populations within the allotments where 3,329 AUMs are now reserved for big game wildlife. Within those same allotments, cattle and sheep numbers would be increased from the current apparent 65 percent use to 100 percent of preference, brought about by increasing values of cattle and sheep at the marketplace. Within this part of the planning unit, the crucial winter range in the Deleeuw, Post Hollow, Terza Flat, Long Hollow, and Cyclone allotments would be severely overtaxed and still be within authorized AUM allocations for wildlife and livestock.

In other allotments in which no reservations were made for wildlife, recent inventories have verified the existence of sizable populations of elk and antelope, and the historic deer herd is expected to increase. If the value of marketable livestock continues to increase, the number of livestock in these allotments is expected to increase from the average apparent 65 percent use to 100 percent authorized use.

Because of the current conditions of all the allotments in the planning unit, the vegetation resource would be seriously overtaxed with adverse impacts to watershed, wildlife, and livestock forage, and aesthetics.

There would also probably be serious confrontations between local livestock operators, the Utah Division of Wildlife Resources, and sportsmen groups over the current number and kinds of animals on the public ranges.

Archaeological Resources

Archaeological resources will continue to be subject to vandalism and weathering. Vandalism will increase as recreational use of the area increases.

Visual Resources

Future oil, gas, and gypsum exploration and development will alter and in some cases dominate the natural landscape in localized areas. Public lands under the jurisdiction of the BLM will be managed within VRM guidelines.

Land Uses

Recreation

An anticipated 2.5 percent annual increase in demand for recreation is projected to occur within the planning unit, as compared to an anticipated 6 percent annual increase in demand for recreation statewide (Green and Elmer, 1973). In the future, hunting and fishing will continue to be the major recreational uses of the planning unit. The proposed construction of the IPP power plant immediately northwest of the planning unit would result in increased levels of local recreational use. A BLM Utah State Office projection model indicates IPP would increase regional recreational demands 48 percent by 1980 and 9 percent every 5 years after 1980. If IPP is built in the vicinity, increased use would result in less hunter and fisherman success and a reduction in the quality of the recreational experience.

Livestock Grazing

Rapidly increasing prices for beef and lamb may result in increased demand for forage from the public lands. Livestock operators are currently using about 65 percent of the forage that is allocated to them. It is possible that forage up to 100 percent of allocation could be used on the planning unit. It is likely that ranching operations would become larger, but fewer. The typical cow-calf operation would continue as the basic ranch program.

Wilderness

The wilderness inventory process within the planning unit will be completed. Roadless inventory units determined not to possess wilderness character will be eliminated from further wilderness review, and will no longer be subject to interim management protection. Units determined to have wilderness character will be identified as Wilderness Study Area (WSAs). Should any WSAs be identified, they would be subjected to additional review criteria, and by October 8, 1991 would be recommended to the President of the United States as suitable or non-suitable for wilderness designation. As a result of the wilderness review, it is possible that a portion of the unit could be designated as wilderness by Congress.

Socioeconomics

The population in the planning unit would grow very slowly, if at all. The area's populace would continue to place a high value on agriculture and livestock grazing. The trend from sheep to cattle would continue, but the total proportion of livestock would not increase. The total employment would not increase and many of the people would continue to obtain their living from using the area's natural resources.

The people would continue to be very interested in the environment and the land on which the livestock and wildlife graze. They would continue to know very little about Federal planning, and they would not trust the decisions made from it. They would continue to place a high value on individualism and close community relations.

The influence of ranching on the local economy would continue to decline. This would result from economic factors within the ranching industry (i.e., increasing operating costs, market uncertainty, inflation of property values, etc.), increased access, and recreational use of the area. It is becoming more attractive for less efficient ranches to sell base property for subdivision or to be incorporated into larger, more efficient ranching operations. While this trend will probably decrease the number of ranch operations somewhat, the majority of the operators can be expected to remain in the ranching business on at least a part-time basis.

Recreational use in the area is expected to increase at a rate of 2.5 percent annually. If this is applied to the $376,800.00 generated by big game hunting in the local economy, it would become $437,000.00 by 1985 and $494,400.00 by 1990.

CHAPTER 3

IMPACTS

CHAPTER 3
THE ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION

A. INTRODUCTION

This chapter is an analysis of the significant impacts of the proposed action. Implementation of the proposed management would include four major actions which would cause impacts: implementing grazing systems, adjusting forage allocation, adjusting season of use, and constructing range developments.

Analysis indicates that there would be no significant impacts on climate, geology, topography, paleontological resources, historical resources, and wild horses and burros. Therefore, these resources are not discussed. This chapter presents the analysis of those impacts which are considered to be of primary interest to the public, other agencies, and the managers of the public lands involved. Significant impacts are defined as those which (1) substantially affect the quality of the human environment, (2) are controversial or of high public concern, or (3) affect legally protected species or resources.

The discussions of impacts are based on a detailed analysis and a cause-effect documentation process as described in Appendix III-1. It is assumed that actual livestock grazing use would increase to 100 percent of allocation. Due to the structure of the Utah Board of Big Game control, it is assumed that big game numbers can be controlled as indicated in the proposal.

The most dominant direct impact from livestock grazing would occur on the vegetation resource. Changes in vegetation production, condition, and trend would indirectly affect other resources. Direct impacts would also occur to a lesser extent to other resources (such as soil compaction by livestock, disturbance through land treatment, or visual effects of range developments).

Each environmental resource section in this chapter contains four divisions. The introduction describes the sub-component to be discussed and the major anticipated changes. The analysis tables discuss the area affected, duration, magnitude, significance, as well as rationale and documentation of the findings. The assessment focuses on relationship to other resources, existing standards, existing environment, and an interpretation of the degree of change on the total environment. The conclusion evaluates all factors taken together and provides an overall statement of impact. The reader may obtain an overall, or general, understanding of the impacts by reading only the conclusion for each resource.

Impacts are assessed for the short-term and the long-term. The short term is the period from 1 to 20 years, the time needed to completely implement the proposed action; long-term is the period beyond 20 years when the proposed action is fully implemented.

B. IMPACTS ON AIR QUALITY

1. Introduction

This section describes the anticipated impacts that the proposed action would have on the air quality of the planning unit. Impacts on air quality would be limited to the proposal to chain 4,800 acres within the Seven Mile Allotment. This chaining would produce localized dust as it progresses.

2. Analysis of Impacts

The following table shows the probable impacts and rationale for projecting the impacts on air quality.

ANALYSIS OF IMPACTS ON AIR QUALITY

Impacts	Rationale
4,800 acres of pinyon-juniper and big sagebrush would be chained and seeded in the Seven Mile Allotment. There would likely be localized dust produced during chaining. The significance depends on climatic conditions. Chaining activities could last up to 30 days and would be completed over a two-year period. Dust produced would be limited to the immediate vicinity of the tractor and the vegetation that is being uprooted.	Chaining is proposed during normally wet months. Though dust would be produced, experience has shown that one car driving down a dirt road creates a greater impact.

3. Overall Assessment

As part of the proposal on the Seven Mile Allotment, 4,800 acres of pinyon-juniper and big sagebrush would be chained. It is anticipated that the chaining would be done over a two-year period, one-half completed each year. The chaining operation itself would produce dust as the chain uproots the vegetation, but this dust would be confined to the immediate vicinity of the tractors and the chain and would last for a very short period of time.

The chaining would be completed in September and October of each of the two years. These two months are typically the third and fourth wettest months of the year (0.86 inches and 0.70 inches respectively), and soil moisture would be high during the chaining period. Soil moisture would prevent large amounts of dust.

4. Conclusion

Based on the above analysis and assessment, it is expected that the chaining would have a very small and short-term effect on the air quality of the area.

C. IMPACTS ON SOILS

1. Introduction

This section describes the anticipated impacts which the proposed action would have on soils. Impacts on soils are closely related to vegetation impacts covered in another section of this chapter.

Major impacts include those on sediment yield and erosion conditions.

2. Analysis of Impacts

The following tables show the probable impacts and rationale for projecting these impacts on sediment yield and soil erosion conditions.

ANALYSIS OF IMPACTS ON SEDIMENT YIELD

Impacts	Rationale
NO LIVESTOCK GRAZING	
Two allotments, 475 acres (less than 1 percent of the planning unit).	
Present annual sediment yield is about 1.5 acre-feet per square mile or 1 acre-foot for the 475 acres. This rate is not expected to change based upon vegetation change.	The proposed action involves no change from present use. Therefore, no change is expected in the factors that influence erosion condition. By maintaining erosion condition as moderate, the planning objectives would be met.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit).	
Present sediment yield is about 80 acre-feet per year or about 0.4 acre-feet per square mile per year. Sediment yield could increase during the initial 5 years of the proposed action . Adjustments of the livestock allocation may be needed in 5 years as outlined under the proposal. The amount of sediment increase within the 5 year period is unknown.	According to studies (Gifford, 1975), grazing has a significant impact on sediment yields. Sediment yield is a function of surface geology, soils, climate, runoff characteristics, topography, land use, upland erosion, channel erosion, and ground cover. If the vegetation ground cover decreases, the sediment yield would increase.
Equipment used in modifing 25 reservoirs and construction of two new reservoirs would disturb the vegetation on about 27 acres. Most of the disturbed area is within the drainage of the reservoir, so any increased soil movement would be collected in the reservoir. The two new reservoirs would cause an increase in soil movement at the site, but most of it would only move to the bottom of the reservoir.	Past experience has shown that during construction of a small earthen reservoir, about 1 acre of surface is disturbed. Laying of pipeline with a trough disturbs about 1 1/4 surface acres per mile. This disturbance reduces vegetation ground cover slightly or may remove it completely. Studies have shown that overland water flow and sediment yield increases as vegetation ground cover decrease (Bentley and Eggleston, 1977).
The construction of 8 miles of pipeline and 5 troughs would decrease vegetation ground cover on about 10 acres. This would increas sediment yield until vegetation is replaced (a period of 1 to 3 years).	

ANALYSIS OF IMPACTS ON SEDIMENT YIELD (concluded)

Impacts	Rationale
IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring)	
One allotment, 21,159 acres (10 percent of the plannint unit).	
Presently there are about 13 acre-feet per year or 0.4 acre-feet per square mile per year of sediment coming from this allotment. The proposed action may cause a slight increase the first year due to soil disturbance by equipment, but over the twenty-year period there would be a decrease of about 2 acre-feet per year or a 15 percent decrease in total sediment yield.	The proposed action would be a considerable change from the present management. Vegetation and soil would be affected by change in grazing and equipment operations. The initial construction actions would be detrimental to both vegetation and soils, causing slightly greater sediment yields. Over a twenty-year period, sediment yield would decrease by about 2 acre-feet per year, mostly from the change in livestock grazing. This correlates with studies made by Hickey and Garcia, 1964, and others.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter)	
Eleven allotments, 54,294 acres (25 percent of the planning unit).	
The present sediment yield is about 116 acre-feet per year or 1.4 acre-feet per square mile per year. This yield is expected to remain about the same for the next 15 to 20 years.	The change in grazing management is not great, but is expected to slightly increase vegetation cover and increase key species. The vegetation cover is basically what changes the sediment yield and very little change is expected.
The development of one new reservoir, modification of two old reservoirs and construction of 6 miles of fence would increase sediment yield a very small percent for a short time (1 to 3 years).	Past experience has shown that during construction of a small earthen reservoir, about 1 acre of surface is disturbed, and that during fence construction about 1 acres of surface is disturbed per mile. This disturbance reduces vegetation ground cover slightly to completely. Studies have shown that overland water flow and sediment yield increase as vegetation ground cover decreases (Bentley ad Eggleston, 1977).
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Winter)	
Nine allotments, 10,543 acres (5 percent of the planning unit).	
The present sediment yield of 35 acre-feet per year would be reduced by 34 percent to about 23 acre-feet per year within the next 20 years.	The change in grazing to limit use of key species to 60 percent would tend to increase vegetation ground cover. This will reduce sediment yield. The amount was determined by using the PSIAC sediment yield method as used by the BLM in the watershed program.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter)	
One allotment, 272 acres (less than 1 percent of the planning unit).	
As a result of increased vegetation ground cover, the present sediment yield of 1 acre-foot per year is expected to decrease to less than 1/2 acre-foot.	Studies by Kincaid et.al., 1964, have shown that infiltration rates increase with increased vegetation ground cover and sediment yield is reduced when infiltration rates increase. Therefore, with an increase of vegetation ground cover, sediment yields would decrease.

ANALYSIS OF IMPACTS ON SOIL EROSION CONDITION

Impacts	Rationale
NO LIVESTOCK GRAZING	
Two allotments, 475 acres (less than 1 percent of the planning unit).	
The present erosion condition of moderate would remain unchanged for the next 15 to 20 years.	The proposed action involves no change from the present management. Factors such as vegetation ground cover and composition that affect sediment yield are not expected to change.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit).	
Presently 48 percent of the area is stabilized, 47 percent shows only slight erosion, and 5 percent shows moderate erosion. Erosion conditions could decline during the initial 5 years of the proposed action. Adjustments of the livestock allocation may be needed in 5 years as outlined under the proposal. The amount of decline in the erosion condition within the 5 year period is unknown.	Erosion conditions are closely tied to vegetation ground cover. If the vegetation ground cover decreases, the sediment yield would increase. With increased erosion, erosion conditions would decline.
Modification of 25 existing reservoirs, construction of 2 new reservoirs, and construction of 8 miles of pipeline with 5 troughs would cause disturbances of about 37 acres.	Experience has shown that equipment operation for pipeline construction, reservoir construction and modification destroys some of the vegetation ground cover, which leaves the soil surface less protected. The unprotected soil is much more likely to be moved by wind and water for 1 to 3 years until vegetation ground cover is reestablished.
IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring)	
One allotment, 21,159 acres (10 percent of the planning unit).	
Present conditions: 1,250 acres (6 percent) stable; 15,709 acres (74 percent) slight erosion; 1,490 acres (7 percent) moderate erosion; 2,710 acres (13 percent) unclassified.	
The change in management would increase the better erosion condition classes over a 20 year period. Most of the slight erosion class should improve to the stable class, and most of the moderate erosion class should improve to slight.	The proposed action would involve a significant change in management. The greatest change would be to grazing practices. The change would allow vegetation to complete regular growth cycles much more often than under the present practices. This would allow greater growth, increase soil cover, and thereby improve erosion condition. Studies of rest-rotation grazing indicate these increases are likely (Hormay and Talbot, 1961).
The proposed development would cause an increase in poorer erosion conditions on 4,821 acres for a short time (one to three years).	The equipment operation for developments constitutes a significant change in use for a short time and on relatively small areas. Experience has shown that during chaining operations, some vegetation ground cover is lost for a short period of time. Construction of pipeline, fences, and reservoirs destroys vegetation ground cover on small areas. The loss of vegetation ground cover allows wind and water to move soil much more easily until the surface vegetation ground cover is replaced, which usually occurs in a period of 1 to 3 years.

ANALYSIS OF IMPACTS ON SOIL EROSION CONDITION (concluded)

Impacts	Rationale
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter)	
Eleven allotments, 54,294 acres (25 percent of the planning unit).	
9,099 acres (17 percent) stable; 24,485 acres (45 percent) slight erosion; 17,601 acres (31 percent) moderate erosion; 1,950 acres (4 percent) critical erosion; 1,159 acres (3 percent) not classified.	
These conditions are not expected to be altered by the change in grazing management. Development of one new reservoir, modification of two existing reservoirs, and construction of 6 miles of fence would cause increased erosion on about 9 acres.	The change in grazing management is not great and would not change the factors that affect erosion condition to any extent. The disturbance of 9 acres during reservoir construction and modification and construction of 6 miles of fence would reduce the erosion class of the 9 acres for a short term of 1 to 3 years because of the reduction in vegetation ground cover.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Winter)	
Nine allotments, 10,543 acres, (5 percent of the planning unit).	
Within 20 years, the present 280 acres in stable erosion condition would be increased to 1,055 acres, the 7,953 acres in slight erosion condition would be increased to 8,434, and the 720 acres in moderate condition would be increased to about 1,054 acres.	The improvement in erosion condition is an estimate based upon the expected change in vegetation ground cover.
About 2 acres would be disturbed along the fencelines for the three exclosures, causing increased soil erosion for a short time.	Equipment used in constructing the fence for the exclosures would reduce vegetation ground cover on about 2 acres. This would provide increased soil erosion until the vegetation is replaced. Revegetation is expected in 1 to 3 years.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter)	
One allotment, 272 acres (less than 1 percent of the planning unit).	
Presently the erosion condition of the 272 acres is slight. Within 20 years, this condition would change to stable.	Experience has shown that, with increased vegetation ground cover and decreased sediment yield, the area would become stable.

3. Assessment

The present sediment yield on 126,314 acres (59 percent of the planning unit) is estimated to be 80 acre-feet per year. The amount of increase within the next 5 years is not known but is not expected to be significant. The estimated sediment yield on 21,159 acres (10 percent of the planning unit) is 13 acre-feet per year. It is expected that sediment yield would be decreased by a total of 2 acre-feet per year over a 20 year period. Sediment yield is estimated to be 116 acre-feet per year on 54,294 acres (25 percent of the planning unit) and is expected to remain constant. On 10,543 acres (5 percent of the planning unit) sediment yield is estimated to be 35 acre-feet per year and is also expected to remain constant. Sediment yield is a function of surface geology, soils, climate, runoff characteristics, topography, land use, upland erosion, channel erosion, and vegetation ground cover. All of these factors would remain constant except for vegetation ground cover. A decrease in the vegetation ground cover would increase sediment yield and an increase in the vegetation ground cover would decrease sediment yield.

Soil erosion condition is also strongly related to the vegetation ground cover and on 126,314 acres (59 percent of the planning unit) the erosion condition would decline an unknown amount due to a decrease in vegetation ground cover. On 21,159 acres (10 percent of the planning unit) most of the slight erosion class would improve to the stable class and most of the moderate class would improve to the slight class. On 54,294 acres (25 percent of the planning unit) the erosion condition would remain constant and on 10,543 acres (5 percent of the planning unit) the acreage in the stable, slight, and moderate conditions would increase.

4. Conclusion

The proposal is not expected to significantly impact 198,151 acres (89 percent of the planning unit) and would reduce sediment yield by 2 acre-feet per year on 21,159 acres (10 percent of the planning unit).

Present soil erosion conditions on 86,269 (40 percent of the planning unit) would be improved as shown in the following chart:

Erosion Condition Class	Acres	
	Present	15 to 20 years after Proposed Action
Stable	10,630 (12%)	27,386 (32%)
Slight	48,419 (56%)	34,409 (40%)
Moderate	19,811 (23%)	18,655 (22%)
Critical	3,540 (4.5%)	1,950 (1.5%)
Unclassified	3,869 (4.5%)	3,869 (4.5%)

D. IMPACTS ON WATER RESOURCES

1. Introduction

The following section analyzes the expected impacts on water quantity and water quality caused by the proposed action.

Water quantity is not expected to change, but the overland flow would decrease and ground water increase as a result of increased ground cover. The increase in surface runoff would cause a slight lowering of the water quality.

2. Analysis of Impacts

The following table shows the possible impacts and rationale for projecting these impacts on water quantity and quality.

ANALYSIS OF IMPACTS ON WATER QUANTITY

Impacts	Rationale
NO LIVESTOCK GRAZING	
Two allotments, 475 acres (less than 1 percent of the planning unit).	
The estimated annual water yield from overland flow is zero. No change is expected in the next 15 to 20 years by implementing the proposal.	The proposed action involves no change from the present management. Therefore, a continuation of the present conditions are expected.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit).	
Present water yield is estimated at 8,915 acre-feet per year. This yield is not expected to change within the next 15 to 20 years as a result of the grazing proposal.	Animal grazing affects water yield by altering vegetation ground cover and soil compaction. If the vegetation ground cover decreases, surface runoff would increase and infiltration would decrease. No change in the total water yield is expected.
About 1,000 to 2,000 acres would be affected by reservoir construction. Water yield from two small areas would be retained in a small basin. About 5 to 10 acre-feet of water could be retained within one year.	Small reservoirs are usually designed to drain sufficient land area to produce 3 to 5 acre-feet of water. Thus this amount of water is restricted to a small holding basin. Some of the water is lost to evaporation, some used by animals, and some lost to seepage. The net results is a reduction in down stream water yield.
IMPLEMENT TWO PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring)	
One allotment, 21,159 acres (10 percent of the planning unit).	
Present estimates show 1,760 acre-feet water yield per year. This yield is expected to stay about the same or decrease slightly. Overland waterflow would decrease and infiltration increase. A 2-hour intense storm producing 1.1 inch of precipitation would yield about 107 acre-feet of overland water under present condition. Within 15 to 20 years under the proposed action, the yield would be 96 acre-feet or a reduction of 10 percent.	The change from continuous-seasonal grazing to rest-seasonal grazing is expected to increase ground water, reduce sediment production, and increase vegetation production. A similar change in grazing has resulted in the above changes without changing the runoff (Alden and Garcia, 1973). Other studies show that increased vegetation ground cover increases infiltration. Therefore, it is believed that overland flow would decrease and ground water recharge would increase with some increased water loss through plant use in place.
Water yield from a small 1,000 acre watershed would be retained in a small basin where it would be consumed by animals, evaporate, or seep into and recharge the ground water. About 1 to 5 acre-feet of water could be retained within 1 year.	A small reservoir is usually designed to drain sufficient land area to produce 3 to 5 acre-feet of water. Thus, this amount of water is restricted to a small holding basin. Some of the water is lost to evaporation, some used by animals, and some lost to seepage. The net results is a reduction in downstream water yield.
About 21 acres disturbed along fencelines, pipelines, and trough sites within the allotment would cause very minimal impacts to water quantity.	The change in vegetation ground cover on the small area (21 acres) could slightly increase water yields for a year or two, but the increase would be too small to measure.

ANALYSIS OF IMPACTS ON WATER QUANTITY (concluded)

Impacts	Rationale
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter)	
Eleven allotments, 54,294 acres (25 percent of the planning unit).	
Currently there are about 237 acre-feet of water delivered from the 11 allotments. This amount is not expected to change to any extent because of the proposed grazing within the next 20 years.	Vegetation conditions are not expected to change because the change in grazing management is not significant. Therefore, water yield would not change (vegetation amount and kind influences water yield).
About 1,000 acres would be affected by reservoir construction. Water yield from this area would be restricted by a small earth dam.	A small reservoir is usually designed to drain sufficient land area to produce 3 to 5 acre-feet of water. Thus this amount of water is restricted to a small holding basin. Some of the water is lost to evaporation, some used by animals, and some lost to seepage. The net result is a reduction in downstream water yield.
CONTINUE WITH CONTINUOUS -SEASONAL GRAZING ADJUSTED BY UTILIZATION (Winter)	
Nine allotments, 10,543 acres (5 percent of planning unit).	
The present 27 acre-feet water yield per year is expected to continue about the same. A 2-hour intense storm delivering 1.1 inches of rain would result in about 98 acre-feet of overland water flow under present management. Under the proposed management within 15 to 20 years, the same type and intensity storm would result in about 65 acre-feet of overland waterflow, or a 34 percent reduction.	An increase in vegetation cover is expected with decreased sediment yield. However, studies by Hickey and Garcia (1964) indicate that this often happens without changing the water yield because of increased infiltration.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter)	
One allotment, 272 acres (less than 1 percent of planning unit).	
Present water yield is estimated at zero. No significant change is anticipated.	There would be some change in vegetation ground cover and infiltration rates, but water yield is expected to be about the same. This agrees with studies of Hickey and Garcia (1964).

ANALYSIS OF IMPACTS ON WATER QUALITY

Impacts	Rationale
NO LIVESTOCK GRAZING	
Two allotments, 475 acres (less than 1 percent of the planning unit).	
No water is produced annually from the overland flow on the two allotments. No change is expected in the next 15 to 20 years by implementing the proposal.	The proposed action involves no change from the present management. Therefore, continuation of the present conditions is expected.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit).	
Present water quality could decline over the initial 5 years of the proposed action. Adjustments of the livestock allocation may be needed in 5 years as outlined under the proposal. The amount of decline in water quality within the 5 year period is unknown.	A decrease in vegetation ground cover would decrease infiltration and increase runoff. Surface runoff contains more sediment, coliform, and other pollutants than ground water. An increase in surface runoff would lower overall water quality.
About 37 acres would be disturbed by the proposed developments. This would lower the quality of water delivered from the area because of increased sediment. Amount of pollution is not known but would occur for 1 to 3 years.	Equipment constructing the reservoirs and pipeline would reduce vegetation ground cover, providing opportunity for greater overland waterflow. This would move more soil and other surface pollutants into water systems.
IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring)	
One allotment, 21,159 acres (10 percent of planning unit).	
Water quality from the entire allotment is expected to be improved, but how much is not known.	The proposed grazing management is expected to increase vegetation vigor, number, and vegetation ground cover. These changes would reduce overland waterflow and increase infiltration. Therefore, water delivered from the area would carry less surface pollutants such as sediment, coliform, and organic material. The amount it is carrying now and the amount it would be reduced is not known.
Chaining 4,800 acres (21 percent of the allotment, or 2 percent of the planning unit) would lower water quality of the overland flow from the disturbed area. The amount is not known but is believed to be slight and would last from 1 to 3 years.	The chaining operation would disturb the present soil surface protection. Storm action on the soil surface would increase soil movement both by wind and water, until the protection was restored which is expected in 1 to 3 years.
Water quality of the overland flow from disturbed area about 21 acres around the fence, pipeline, reservoirs, and trough sites (less than 1 percent of allotment) would be lowered. The amount is not known but would be very slight and would last from 1 to 3 years.	The equipment used in constructing the 9 miles of fence, 8 miles of pipeline, 4 water troughs, and one reservoir would destroy vegetation and soil cover. This would provide increased opportunity for overland waterflow, which would increase the possibility of carrying more pollutants into the water system.

ANALYSIS OF IMPACTS ON WATER QUALITY (concluded)

Impacts	Rationale
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter)	
Eleven allotments, 54,294 acres (25 percent of the planning unit).	
Water quality is not expected to change as a result of the proposed grazing within the next 20 years.	Because the factors that affect water quality are not expected to change, water quality is not expected to change. There was no specific planning objective for water quality.
About 7 acres disturbed by fence and reservoir construction would provide opportunity for slight water quality lowering.	Construction of 6 miles of fence and one reservoir would reduce the vegetation ground cover on about 7 acres. Increased overland waterflow would occur carrying soil and other surface material into the water system. Within 1 to 3 years, vegetation ground cover would be replaced, reducing water movement to what it was prior to construction.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Winter)	
Nine allotments, 10,543 acres (5 percent of the planning unit).	
Present water quality would be improved by the proposed action but to what extent is not known.	Many studies indicate that increased vegetation ground cover reduces sediment yield, which in turn reduces the pollutants in the water. The amount is not known.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter)	
One allotment, 272 acres (less than 1 percent of planning unit.	
No water yield is projected from these allotments. No significant change is anticipated.	No water yield is projected from these allotments.

3. Assessment

The present water yield from the planning unit is estimated to be 10,939 acre-feet per year and is not expected to change in the next 20 years. The amounts of runoff would decrease where the vegetation ground cover increases and the amount of infiltration would decrease where the vegetation ground cover decreases. On 126,314 acres (59 percent of the planning unit) the vegetation ground cover is projected to decline, on 31,702 acres (15 percent of the planning unit) the vegetation ground cover is projected to increase slightly and on 54,294 acres (25 percent of the planning unit) the vegetation ground cover is projected to remain constant.

Water quality would be altered as the amounts of runoff and infiltration are altered. Surface runoff now contains more sediment, coliform, and other pollutants than groundwater. A reduction in surface runoff would improve the overall water quality by an unknown amount on 122,498 acres.

Overland waterflow as a result of high-intensity, short-duration storms would be reduced by 10 percent on the Seven Mile Allotment and by 35 percent on the nine allotments adjusted by utilization.

Water quality data from the Fremont River station near Bicknell generally shows good water quality. (Water yield from the planning unit makes up about 10 percent of the Fremont River flow at Bicknell.) The water quality is expected to improve slightly because of the increased vegetation ground cover and the reduction of sediment yield. To what extent is not known. Developments proposed such as fences, pipelines, and reservoir would slightly lower the water quality and increase the overland waterflow for a short period--1 to 3 years.

4. Conclusion

The present water yield of 10,939 acre-feet per year would remain constant for the next 20 years. Water quality, as judged by the amounts of runoff and infiltration, would decline on 59 percent of the planning unit, improve on 15 percent of the planning unit and remain constant on 25 percent of the planning unit.

E. IMPACTS ON VEGETATION

1. Introduction

This section describes the anticipated impacts which the proposed action would have upon vegetation on public lands in the planning unit. Impacts to vegetation are interrelated with impacts to animal life, livestock grazing, watershed, and visual resources.

Vegetation is divided into the following sub-categories for analysis in this section--types, subtypes, and riparian conditions; vegetation ground cover; key species and vegetation composition; threatened and endangered species; forage production; forage condition; and trend in forage condition.

Impacts each component of the proposal would have upon each sub-category of the vegetation resource are analyzed separately, followed by an assessment of the impacts and a conclusion.

2. Analysis of Impacts

The following tables show the probable impacts and rationale for predicting these impacts on the seven sub-categories of vegetation.

ANALYSIS OF IMPACTS ON TYPES AND SUBTYPES
(Including Riparian Vegetation and Condition)

Impacts	Rationale
NO LIVESTOCK GRAZING	
Two allotments, 475 acres (less than 1 percent of the planning unit).	
Present vegetation types are: Sagebrush - 40 acres - 8 percent; Pinyon-Juniper - 323 acres - 68 percent; Waste - 112 acres - 24 percent.	Present forage condition for the 475 acres is good. Harvesting practices are not expected to change; therefore, the vegetation types are not expected to change.
These types are not expected to change.	
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit).	
Present vegetation types are: Sagebrush - 103,176 acres - 81 percent; Grass - 17,748 acres - 14 percent; Pinyon-Juniper - 5,238 acres - 4 percent; Broad-leaf tree - 131 acres - 1 percent; Riparian - 21 acres <1 percent; Condition: 11 acres-fair - Pine Creek, 10 acres-good - Riley Creek.	Grazing intensity under the proposed action would increase over the 1975 to 1978 grazing use and would cause a change in vegetation composition. However, vegetation types and subtypes are broadly classified according to the overall appearance of the vegetation. Changes in composition would not be great enough to alter the appearance of classification of the vegetation types and subtypes.
Vegetation types and riparian vegetation condition would not change.	Riparian areas are presently heavily grazed. The increase in livestock numbers would not result in heavier use on riparian vegetation or a change in riparian vegetation condition because livestock graze vegetation around water sources before they move elsewhere. Riparian vegetation would continue to be heavily grazed.
IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring)	
One allotment, 21,159 acres (10 percent of planning unit).	
Vegetation types and subtypes would not change as a result of two-pasture rest-seasonal grazing.	Up to a 50 percent increase (15 percent composition up to 22 percent) in key species and desirable bench grasses could occur. However, the dominant appearance of the types and subtypes would remain.
Twenty-one acres would be affected by equipment operation during construction of developments, and 4,800 acres by chaining.	Chaining reduces numbers of pinyon and juniper trees by 40 to 70 percent. Smaller trees and shrubs are protected by chain being lifted over the larger trees. Therefore, sagebrush and other lower-growing plants would be the dominant aspect. According to reports, reinvasion would occur within 6 to 20 years, depending on the number of young trees in the stand at the time of chaining (Aro, 1971). Chaining sagebrush kills from 40 to 90 percent of the mature sagebrush plants. However, the remaining 10 to 60 percent would give a sagebrush appearance, and thus the vegetation type would not change.
Present vegetation types are: Sagebrush - 11,941 acres - 56 percent; Grass - 1,270 acres - 6 percent; Pinyon-Juniper - 7,136 acres - 34 percent; Broad-leaf trees - 812 acres - 4 percent.	
2,400 acres vegetation type changed from pinyon-juniper to sage-grass because of chaining will probably revert back to pinyon-juniper within 6 to 20 years.	

ANALYSIS OF IMPACTS ON TYPES AND SUBTYPES (continued)

Impacts	Rationale
IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring) (continued)	
2,400 acres sagebrush chaining would not be expected to change vegetation type, but sagebrush composition would be reduced by about 1/2, to 30 to 40 percent of the composition.	
The equipment operations for development work would destroy some vegetation but would not change the type. The major portion of this unit would show no change in vegetation types.	
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter)	
Eleven allotments, 54,294 acres (25 percent of the planning unit).	
Present vegetation types are: Sagebrush - 18,237 acres - 34 percent; Grass - 5,385 acres - 9 percent; Pinyon-juniper - 29,203 acres - 54 percent; Annuals - 1,450 acres - 3 percent' Riparian - 14 acres - less than 1 percent.	Vegetation ground cover is expected to remain static or increase 1 or 2 percent; key species are expected to increase. Forage production would show very little change and range condition would show none. These modifications would not alter the vegetation enough to change the vegetation types.
The riparian vegetation condition is good. These types and conditions are not expected to change as a result of the proposed action.	The grazing pressure on riparian vegetation is expected to remain about the same even though grazing pressure would be less on the total allotment. This is because animals usually graze vegetation around water sources before they move elsewhere.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Winter)	
Nine allotments, 10,543 acres (5 percent of the planning unit).	
Present vegetation types are: Sagebrush - 2,858 acres - 27 percent; Grass - 1,004 acres - 9 percent; Pinyon-juniper - 5,970 acres - 57 percent; Waste - 688 acres - 7 percent (not a vegetation type); Riparian - 23 acres - less than 1 percent.	Vegetation ground cover is expected to slowly increase from 13 to 20 percent. Key species would remain static or increase slightly. These increases would not alter plant composition enough to make a type change. Grazing use on riparian vegetation is expected to remain the same even though total use is reduced. This is because grazing animals tend to concentrate their use near water.
The condition of the riparian vegetation is good, and condition and types are not expected to change.	
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter)	
One allotment, 272 acres, (less than 1 percent of the planning unit).	
Present vegetation types are: Sagebrush - 51 acres - 19 percent; Pinyon-Juniper - 212 acres - 78 percent; Riparian - 9 acres - 3 percent.	As a result of the change in grazing management, vegetation cover is expected to improve by 10 to 15 percent. This would result in more (as well as larger) plants, but composition is not expected to change enough to alter the overall vegetation types.

ANALYSIS OF IMPACTS ON TYPES AND SUBTYPES (concluded)

Impacts	Rationale
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter) (continued)	
These vegetation types are not expected to change as a result of the proposed action.	
Riparian vegetation condition of poor on the 9 acres would improve to fair or good within 20 years.	Riparian vegetation conditions are poor at present because of continued grazing pressure during the growth period of the plants. The change to winter grazing would allow the plants to be ungrazed by livestock during the growing period every year. With this protection, their condition should improve. Studies by Winegar (1977) indicate similar results.

ANALYSIS OF IMPACTS ON VEGETATION GROUND COVER

Impacts	Rationale
NO LIVESTOCK GRAZING	
Two allotments (Dez Hickman and Wildlife), 475 acres (less than 1 percent of the planning unit).	
The present 21 percent ground cover is not expected to change within the next 20 years.	The proposed action involves no change from the present practice of no livestock grazing. The 21 percent vegetation ground cover is a result of this practice. Therefore, no change is expected.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit).	
The average ground cover is about 16 percent. Ground cover could decline if 100 percent of the livestock allocation is used. Adjustments of the livestock allocation may be needed in 5 years as outlined under the proposal. The amount of decline within the 5 year period is unknown.	Studies conducted on range sites indicate that ground cover is inversely proportional to grazing intensity (Kincaid, et al., 1964; Rhodes, et al., 1964). Grazing intensity would increase over current use. Therefore, vegetation ground cover would decline.
About 27 acres (less than 1 percent of this area) at 27 different locations would be disturbed as a result of reservoir modifications or construction. Vegetation ground cover would be reduced to near zero but would recover in 1 to 10 years. About 10 acres would be disturbed as a result of constructing 8 miles of pipeline and five troughs.	Reservoir modification at 25 sites and construction of two new reservoirs are proposed. Equipment operation would remove all vegetation from the actual reservoir location, thus reducing vegetation ground cover. Revegetation is expected on the disturbed sites through natural and artificial seedings. Recovery time would vary from 1 to 10 years depending on the topsoil condition after construction. Equipment used during construction of the pipeline and troughs would disturb vegetation along the lines in a path about 10 feet wide. Vegetation would be reduced by 5 to 80 percent. Artificial and natural seeding is expected to restore vegetation ground cover within 1 to 3 years.
IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring)	
One allotment, 21,159 acres (10 percent of the planning unit).	
Present ground cover is about 28 percent. The change of grazing management is expected to increase this by 5 percent or more over the next 20 years.	A change in grazing use from continuous to rest-seasonal rotation has been shown to improve ground cover, (Hormay and Talbot, 1961). Similar results are expected for this area.
Chaining and reseeding of 4,800 acres (21 percent of allotment) would reduce the vegetation ground cover slightly for one to three years, and the area would then recover or exceed the former percent of vegetation ground cover.	The chaining operation would disturb the present growing plants, killing many of the larger plants, and would reduce the vegetation ground cover until other plants were established. Often when trees and shrubs are removed, smaller plants, including those reseeded, replace them. This provides greater vegetation ground cover.
The pipeline and fenceline construction would disturb about 21 acres of vegetation ground cover, reducing it by 25 to 90 percent. The damage would be done by equipment operation. Recovery is expected in 1 to 3 years.	The development operations use equipment that destroys part or all of the vegetation on a small area, thus reducing ground cover. Usually some type of vegetation cover replaces this within 1 to 3 years.

ANALYSIS OF IMPACTS ON VEGETATION GROUND COVER (concluded)

Impacts	Rationale
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter)	
Eleven allotments, 54,294 acres (25 percent of the planning unit).	
Vegetation ground cover would remain the same or increase slightly as a result of grazing management changes. The average vegetation ground cover is now 14 percent. In 20 years, this could increase to 16 percent on 8 allotments. The Neff Ranch Allotment may increase 5 to 10 percent. The Miner's Mountain and Torrey Town allotments may stay the same or lose 2 to 5 percent.	Vegetation ground cover is inversely proportional to the intensity of grazing (Kincaid, et al., 1964 and Rhodes, et al., 1964). Livestock use would only be reduced by an average of 8 percent. Season of use would be mostly winter with some spring. Current forage trend is down, and current conditions fair to good. Substantial reduction in grazing use during winter season on allotments such as Neff Ranch would allow best opportunity for vegetation recovery and increases, while spring grazing on allotments such as North Fremont, Miner's Mountain, and Torrey Town would allow the least opportunity for vegetation recovery and increases.
About 3 acres would be disturbed as a result of constructing one new reservoir and modifiying two old reservoirs. Vegetation ground cover would be greatly reduced on the 3 acres. The proposed 6 miles of fence would disturb about 6 acres.	Equipment operation would remove vegetation on about 3 acres, but natural and artifical seeding would restore the vegetation ground cover in 3 to 10 years. During construction of the 6 miles of fence, the amount of vegetation cover destroyed would range from 5 to 80 percent. Vegetation ground cover would be replaced within 1 to 3 years.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Winter)	
Nine allotments, 10,543 acres, (5 percent of the planning unit).	
On four allotments with winter grazing (4,765 acres or 2 percent of the planning unit), the present average vegetation cover of 13 percent is expected to increase to about 20 percent within 20 years. On five allotments (5,778 acres or 3 percent of the planning unit) with early spring grazing, ground cover would likely remain the same.	Increases in key species have been estimated to be 200 to 300 percent. Observation of vegetation ground cover on Terza Flat exclosures indicate that within two or three years, the vegetation ground cover increased 100 percent with elimination of grazing. Hickey and Garcia (1964) found that vegetation ground cover increases 20 percent when use of key species is limited to 55 percent. Therefore, by limiting use of key species to 60 percent on four allotments without spring grazing, there should be an increase in vegetation ground cover. On five allotments with early spring grazing, the response of plants would be slower than on allotments with winter grazing only.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter)	
One allotment, 272 acres (less than 1 percent of the planning unit).	
Vegetation ground cover would increase from the present 9 percent to about 25 percent within 20 years.	Present grazing management allows the vegetation to be harvested every year during the summer season, which is part of the critical growing period for plants. The proposed change would only allow harvesting during the dormant season or winter. This would permit plants to complete their growth cycle every year; hence, they should gain vigor and increase in size and numbers.

ANALYSIS OF IMPACTS ON KEY SPECIES AND VEGETATION COMPOSITION

Impacts	Rationale
NO LIVESTOCK GRAZING	
Two allotments, 475 acres (less than 1 percent of the planning unit).	
By implementing the proposal, no change in key species and vegetation composition is predicted within 20 years. Present key species composition is 15 percent for Dez Hickman Allotment and 23 percent for Wildlife Allotment.	The present grazing management that has been applied for the past 15 years and has brought about the present mix of plants is proposed to continue.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Fifteen allotments 126,314 acres (59 percent of the planning unit).	
There are currently three shrubs and five perennial grasses listed as key species for the 15 allotments. (See Table 2-14 for listing of species composition by allotment.) On 13 allotments (112,562 acres or 52 percent of the planning unit), the composition of key and desirable plant species would decline below present levels. The degree of decline is unknown, but key species that are presently only a trace of total vegetation composition could be eliminated from portions of this area. Adjustments of the livestock allocation may be needed in 5 years as outlined by the proposal. On the Lyman and Post Hollow allotments (7 percent of the planning unit), key species composition may remain the same or decline slightly.	Utilization of key species (which is currently 60 percent) would increase on 13 allotments during critical periods by implementing the proposal, which could result in a decline of these species. Cook (1971) indicates that utilization exceeding 25 percent during late spring may be too severe for optimum vigor and sustained yield of most range forage species. It has been demonstrated that when palatible range forage plants are over utilized and are in less than optimum vigor, they would be replaced by less palatible weedy plants. Therefore, present key species composition on these allotments would decline. On the Lyman and Post Hollow allotments, grazing use would increase only during the winter months which is less detrimental to plant vigor.
IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring)	
One allotment, 21,159 acres (10 percent of the planning unit).	
By implementing the proposed rest-seasonal grazing on 16,359 acres, up to a 50-percent increase in key species and desirable bunchgrass is predicted within 20 years. Up to a 500-percent increase in key species and desirable perennial bunchgrass is expected within 20 years by chaining and seeding the 4,800 acres of sagebrush and pinyon-juniper. Key species are currently 12 percent of the composition, and other desirable bunchgrasses are 3 percent.	Implementing rest-seasonal grazing would allow all forage species a full year's cycle of growth and reproduction without being grazed by livestock. It is important to rest the range from grazing for three specific reasons: (1) to restore plant vigor, (2) to ensure seed development, and (3) to ensure seedling establishment (Hormay and Talbot, 1961). According to studies (Morris, 1934), abundance of grasses increases by 53 percent under rest-seasonal types of grazing. It is expected that grasses on these allotments would respond in a similar manner. This type of grazing management provides 23 months rest from grazing, which is adequate time for establishment of bitterbrush seedlings. However, bitterbrush seedlings compete poorly with grass, and if grasses increase as predicted, successful bitterbush seedling establishment would be minimal (Ferguson, 1979). It is proposed that 2,400 acres of big sagebrush and 2,400 acres of pinyon-juniper be chained. Chaining kills about 60 to 80 percent of pinyon-juniper (Valentine, 1974) and from 30 to 80 percent of sagebrush in mature stands (Cook, 1958).

ANALYSIS OF IMPACTS ON KEY SPECIES AND VEGETATION COMPOSITION (continued)

Impacts

Rationale

IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring)(continued)

Reduction of the sagebrush and pinyon-juniper would release moisture and nutrients necessary for greater growth of desirable forage species. Studies done by the Forest Service (1962) on an adjacent similar sagebrush site indicate the following change in species composition by treating the sagebrush:

	Production at time of Spraying 6/26/61		Production After Spraying 8/6/62	
	Percent Composition	Lbs/Acre Dry Wt.	Percent Composition	Lbs/Acre Dry Wt.
Grass	18	103	89	1,662
Forbs	32	189	11	197
Sagebrush	50	292	0	0
Total	100	584	100	1,859

Similar results would be expected from the proposed chaining and seeding with the exception that chaining would leave 20 to 70 percent of the sagebrush. The proposed seeding treatment is to be done on land with soil associations 2 and 7 (see Appendix II-2). The range of success for reseeding these soils is 30 to 70 percent.

CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter)

Eleven allotments, 54,294 acres, (25 percent of the planning unit).

Present livestock grazing (utilization) of the key species on these allotments is estimated to be generally heavy (70 percent to 90 percent). By reducing livestock grazing allocation to the livestock grazing capacity, utilization of key species would be expected to become moderate. Hutching (1953) found on similar ranges in western Utah that production of black sagebrush, Indian ricegrass, squirreltail, and winterfat increases by an average of 300 percent within 13 years after utilization on these species is reduced from heavy (85 percent) to moderate (60 percent). Similarly, an exclosure on the Terza Flat Allotment that has kept livestock out for 3 years indicates a 250 percent average increase in composition of winterfat, Indian ricegrass, squirreltail, and fourwing saltbush (winterfat showed the highest percent increase). It is expected that key species on eight allotments in this component (25,783 acres or 12 percent of the planning unit) which would be under winter grazing would respond in a like manner as they would not be grazed during the critical spring period.

A 200 to 300 percent increase in key species composition is predicted within 20 years for eight allotments (12 percent of the planning unit) with implementation of the proposal. Key species on these allotments presently average 2 percent so that even with a 300 percent increase they would average only 6 percent of the vegetation composition.

On three allotments (28,511 acres or 13 percent of the planning unit) increases in key species composition would not be expected because they are dominated by closed communities (i.e., pinyon-juniper, blue-grama) and grazing would continue during the critical spring growing period.

On three allotments (13 percent of the planning unit), key species composition is expected to remain static or decline.

ANALYSIS OF IMPACTS ON KEY SPECIES AND VEGETATION COMPOSITION (concluded)

Impacts	Rationale
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Winter)	
Nine allotments, 10,543 acres (5 percent of the planning unit).	
On four allotments (2 percent of the planning unit), a 200- to 300-percent increase of key species is predicted in 20 years. Currently key species average 2 percent for the allotments in this component. On five allotments, (3 percent of the planning unit), use would continue into the early spring period and composition would essentially remain unchanged.	Present livestock grazing (utilization) of key species on these allotments is estimated to be generally heavy (70 to 90 percent). The proposal is to limit utilization on key species to 60 percent. Hutchings (1953) found on similar ranges in western Utah that production of black sagebrush, Indian ricegrass, squirreltail, and winterfat increases by an average of 300 percent within 13 years after utilization on these species is reduced from heavy (85 percent) to moderate (60 percent). Similarly an exclosure on the Terza Flat Allotment that has kept livestock out for 3 years indicates a 250 percent average increase in composition of winterfat, Indian ricegrass, squirreltail and four-wing saltbush. Winterfat showed the highest percent increase (BLM, 1979c). It is expected that within 20 years, key species on four allotments (2 percent of the planning unit) would respond in a like manner in all vegetation types in these allotments except for the pinyon-juniper types, as grazing pressure is reduced from heavy to moderate levels. Because pinyon-juniper is a closed vegetation community, increase in key species would be expected to be less than in other types in this component. Also, less improvement would be expected in the Grover, River, Horse Pasture, Spring Branch, and Teasdale Ranch allotments because the proposal is to continue to allow livestock grazing during April and May, months which are critical to growth and reproduction of some key species.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter)	
One allotment, 272 acres (less than 1 percent of the planning unit).	
Key species (currently 14 percent of total composition) are predicted to increase significantly within 20 years. The amount of expected increase is undetermined.	Cook (1971) found from studies in the Great Basin that defoliation of Indian ricegrass and other species is most harmful during late spring and mid-summer (June-July). Parker (1978) stated that spring use (after May 1) is often damaging to fourwing saltbush, especially if more than 25 percent of the top growth is used. It is concluded from these references that the past grazing use during June and July has been harmful to the key species Indian ricegrass, needle-and-thread grass and four-wing saltbush on Hickman Allotment. (Needle-and-thread grass would respond in a manner similar to Indian ricegrass.) By changing the season of livestock use to winter as proposed, an increase in key species would be expected within 20 years, since there would no longer be grazing by livestock during the critical period. Available data do not allow an accurate determination of possible increases in key species composition.

ANALYSIS OF IMPACT ON THREATENED AND ENDANGERED PLANT SPECIES

Impacts	Rationale
ALL PROPOSAL COMPONENTS	
Thirty-nine allotments (213,057 acres), entire planning unit.	
The impacts this proposal would have upon the candidate and proposed threatened and endangered plant species in this planning unit are unknown, but it is expected that there would be very little if any impact.	According to BYU herbarium records (Welsh, 1976), two proposed endangered plant species (Federal Register, June 16, 1976) and two candidate threatened plant species (Welsh, 1978); have been collected within the Parker Mountain Planning Unit (see Table 2-16). Since critical habitat for these plant species has not been determined, and the extent of their individual populations is unknown, the entire planning unit is included in this impact sub-category. Any type of vegetation management, including type of grazing and vegetation manipulation, could have some effect upon threatened or endangered plant species. Because these species are not well known, the way they respond to various types of vegetation management cannot be determined at this time.

ANALYSIS OF IMPACT ON FORAGE PRODUCTION

Impacts	Rationale
NO LIVESTOCK GRAZING	
Two allotments, 475 acres (less than 1 percent of the planning unit).	
By implementing the proposal, no change in forage production (currently 10 AUMs) is predicted within 20 years.	The present grazing management that has been applied for the past 15 years and has brought about the present mix of plants is proposed to continue.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit).	
Within a 5-year period, forage production would decrease below the present 12,349 AUMs. To remain static, composition of desirable forage species must be maintained at current levels. Any reduction in total composition of these plants would tend to reduce forage production on these allotments. Adjustments of the livestock allocation may be needed in 5 years as outlined under the proposal. The amount of decline within the 5 year period is unknown.	On 13 allotments, the proposal would allow livestock grazing during periods critical to growth and reproduction at a higher than current actual use level. (Livestock actual use averaged 67 percent of allocation between 1975-1977.) This would mean that utilization of important forage species would increase during critical periods by implementing the proposal. This may cause a decline of these species (Cook, 1971). On the Lyman and Post Hollow allotments, grazing use would increase but would be during winter months which are less critical to plant vigor and production.
IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring)	
One allotment, 21,159 acres (10 percent of the planning unit).	
It is predicted that forage production would increase from the present 660 AUMs to approximately 2,100 AUMs within 20 years.	Ratliff (1972) found that rest-rotation grazing management increases forage production by 15 percent above similar areas that are grazed continuously. Similar results would be expected within 20 years by implementing rest-seasonal grazing management on 16,359 acres (which would not be chained) of the Seven Mile allotment. Current forage production is 432 AUMs; if increased by 15 percent, the total would be about 500 AUMs. Studies on nearby, similar U.S. Forest Service land show that forage production increases to produce between 1/2 and 1 AUM per acre after sagebrush spraying (USFS, 1962; USFS, 1973). The proposed 4,800-acre chaining and seeding is expected to produce at approximately 1/3 AUM per acre within 5 years and continue to produce up to that level for 20 years (4,800 acres times 1/3 AUM equals 1,600 AUMs).
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter)	
Eleven allotments, 54,294 acres (25 percent of the planning unit).	
Little or no increase in forage production is expected above the present 2,343 AUMs within 20 years.	Desirable species composition would remain static or increases by 200 to 300 percent with a reduction of livestock from the current heavy grazing to a moderate level (Hutchings, 1953; BLM, 1979c). However, since the desirable forage species are currently at such low levels (average 2 percent of the vegetation composition), forage production is not expected to increase appreciably.

ANALYSIS OF IMPACTS ON FORAGE PRODUCTION (concluded)

Impacts	Rationale
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Winter)	
Nine allotments, 10,543 acres (5 percent of the planning unit).	
It is expected that forage production may increase to above the present 565 AUMs total for allotments in this component within 20 years. The amount of increase is unknown.	Composition of key and other desirable forage species is presently very low, averaging about 2 percent of total composition. Key species composition on these allotments would likely remain static or increase to about 6 percent of total composition. It is concluded that this increase in key and desirable plant species composition would not be enough to provide an appreciable increase in forage production.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter)	
One allotment, 272 acres (less than 1 percent of the planning unit.)	
Present total forage production on this allotment is 12 AUMs. Forage production would be expected to increase to about 34 AUMs within 20 years if the proposal is implemented.	Cook and Stoddart (1963) found that desert ranges are best adapted to winter grazing and have about twice the grazing capacity than when grazed during spring. Since the proposal for this allotment is to change the season of livestock use from early summer (which is the critical period for plant growth and reproduction) to winter, a substantial increase in forage production is predicted.

ANALYSIS OF IMPACTS ON FORAGE CONDITION

Impacts | Rationale

NO LIVESTOCK GRAZING

Two allotments, 475 acres (less than 1 percent of the planning unit.)

The present 100 percent good forage condition is not predicted to change within the next 20 years.

Continuation of existing grazing management would be expected to maintain forage condition on the two allotments, because the same practices that have been in effect for 15 years and have led to the present good forage condition would continue.

CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING

(Spring, Fall, Winter)

Fifteen allotments, 126,314 acres (59 percent of the planning unit).

By implementing the proposal, the present forage conditions of good on 99,489 acres (79 percent), fair on 21,782 acres (17 percent), and poor on 5,043 acres (4 percent) would decline. Adjustments of the livestock allocation may be needed in 5 years as outlined under the proposal. The amount of decline within the 5 year period is unknown. It is not expected that conditions would change sufficiently to change condition class, 99,489 good, 21,782 fair, and 5,043 poor. On two of the allotments (7 percent of the planning unit), the forage condition would likely remain unchanged.

On 13 allotments, the proposal would allow livestock grazing during periods critical to growth and reproduction at a higher level than is currently being used by livestock. (Livestock use averaged 67 percent of allocation or what would be authorized by the alternative for 1976-1977). This would mean that utilization of key and desirable species could increase at critical periods by implementing the proposal which could result in a decline of these species and subsequent forage condition (Cook, 1971). Forage condition would likely remain the same in the Lyman and Post Hollow allotments which would be under winter grazing.

IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring)

One allotment, 21,159 acres (10 percent of the planning unit).

It is predicted that forage condition would change to the following within 20 years by implementing the proposal:

	At Present		20 Years	
Good	4,136	(20%)	14,856	(70%)
Fair	15,456	(73%)	6,303	(30%)
Poor	1,567	(7%)	0	(--)
Total	21,159		21,159	

Implementing rest-seasonal grazing would allow all forage species a full year's cycle of growth and reproduction without being grazed by livestock. It is important to rest the range from grazing for three specific reasons: (1) to restore plant vigor, (2) to ensure seed development, and (3) to ensure seedling establishment (Hormay and Talbot, 1961).

According to studies by Morris (1934), abundance of grasses increases by 53 percent under rest-seasonal types of grazing. It is expected that grasses on these allotments would respond in a similar manner. This type of grazing management provides 23 months of rest from livestock grazing.

It is expected that all 1,567 acres currently in poor forage condition would be improved to fair, and 5,920 acres of the fair would be improved to good condition. Vegetation in the pinyon-juniper type where chaining is not done would not be expected to improve to good condition because it is believed that the pinyon-juniper is largely a closed community (Dwyer, 1975).

The proposed chaining of 4,800 acres would reduce the sagebrush and pinyon-juniper and would release moisture and nutrients necessary for greater growth of desirable forage species. Studies done by the Forest Service (1962) on an adjacent similar sagebrush site indicate the following change in species composition by treating the sagebrush:

ANALYSIS OF IMPACTS ON FORAGE CONDITION (continued)

Impacts	Rationale

IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (continued)

	Production at time of Spraying 6/26/61		Production After Spraying 8/6/62	
	Percent Composition	Lbs./Acre Dry Wt.	Percent Composition	Lbs./Acre Dry Wt.
Grass	18	103	89	1,662
Forbs	32	189	11	197
Sagebrush	50	292	0	0
Total	100	584	100	1,859

Similar increases would be expected from the proposed chaining and seeding, resulting in an improvement of forage condition from fair to good for the 4,800-acre proposed treatment area.

CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter)

Eleven allotments, 54,294 acres (25 percent of the planning unit).

Little or no change is expected from the current forage conditions of good on 3,502 acres (6 percent), fair on 31,502 acres (58 percent), and poor on 19,290 acres (36 percent), within 20 years.

Because desirable species are currently at such low levels (average 2 percent), the predicted changes in key species composition would not be adequate to raise forage to a higher condition class.

CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Winter)

Nine allotments, 10,543 acres (5 percent of the planning unit).

Little or no change is predicted from the current forage condition of good on 4,214 acres (40 percent), fair on 3,388 acres (32 percent), and poor on 2,941 acres (28 percent) within 20 years.

Because desirable species composition is currently at such low levels (average 2 percent), the predicted changes would not be adequate to improve forage to a higher condition class.

CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter)

One allotment, 272 acres (less than 1 percent of the planning unit).

No change from the current forage condition of good on 272 acres (100 percent) is predicted within 20 years.

By changing the livestock season of use from early summer to winter, an increase in desirable plant species is expected within 20 years because these plants would no longer be grazed by livestock during critical periods for growth and reproduction (Cook, 1971; Parker, 1978). However, since forage condition is already 100 percent good, no change in condition is expected.

ANALYSIS OF IMPACTS ON FORAGE CONDITION TREND

Impacts	Rationale
NO LIVESTOCK GRAZING	
Two allotments, 475 acres (less than 1 percent of in the planning unit).	
Trend in forage condition on these two allotments is down.	The downward trend in forage condition on these two allotments is probably due to lack of precipitation. Precipitation has been less than average for the past 6 years (NOAA, 1973 to 1978). It is expected that forage condition trend would improve after a few years of normal precipitation.
Under conditions of normal precipitation and no livestock grazing, forage condition trend would continue to improve and would reach a state of relative stability within a 20-year period.	
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit).	
The current downward trend in forage condition is expected to improve initially with normal precipitation. However, downward trend may be sustainedover a period of 5 years. Adjustments of the livestock allocation may be needed in 5 years as outlined under the proposal. The amount of decline within the 5 year period is unknown. On 13 allotments (52 percent of the planning unit), trend would likely remain static on two allotments (7 percent of the planning unit).	The downward trend in forage condition on these allotments is probably due to lack of precipitation as well as livestock grazing. Precipitation has been less than average for the past 6 years (NOAA, 1973 to 1978). It is expected that forage condition trend would improve initially, after a few years of normal precipitation. On 13 allotments, the proposal would allow livestock grazing during periods critical to growth and reproduction at a higher level than is currently being used by livestock. (Livestock use averaged 67 percent of allocation or what would be authorized by this alternative for 1975-1977.) This would mean that utilization of key species could increase at critical periods by implementing the proposal which could result in a decline of these species and subsequent trend (Cook, 1971). On the Lyman and Post Hollow allotments, grazing use would increase during the winter months which are less critical to survival of forage plants. After a few years of normal precipitation, trend would improve, but would then remain static over the 20 year period.
IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring)	
One allotment, 21,159 acres (10 percent of the planning unit).	
Trend in forage condition on this allotment is down.	The downward trend in forage condition on these allotments is probably due to lack of precipitation. Precipitation has been less than average for the past 6 years (NOAA, 1973 to 1978). Overgrazing has also contributed to this trend.
It is expected that forage condition trend would improve with implementation of rest-seasonal grazing and a few years of normal precipitation.	Implementation of rest-seasonal grazing would allow key and other desirable plant species to become more abundant (as much as 53 percent--Morris, 1934). As these species become more abundant, trend would begin to improve. However, improvement could be limited by lower-than-average precipitation. Under conditions of normal precipitation and rest-seasonal grazing, forage condition trend would continue to improve and would reach a state of relative stability within a 20-year period.

ANALYSIS OF IMPACTS ON FORAGE CONDITION TREND (concluded)

Impacts	Rationale
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter)	
Eleven allotments, 54,294 acres (25 percent of the planning unit).	
The current downward trend in forage condition is expected to improve initially (with normal precipitation) and continue to improve gradually for 20 years on eight allotments (12 percent of the planning unit) and remain static on three (13 percent of the planning unit).	The downward trend in forage condition on these allotments is probably due to lack of precipitation. Precipitation has been less-than-average for the past 6 years (NOAA, 1973 to 1978). It is expected that forage condition trend would improve initially, after a few years of normal precipitation. The changes in key species that are predicted as a result of reduced livestock grazing are expected to continue to improve the trend (Hutchings, 1953; BLM, 1979c) on eight allotments under winter grazing and create a static trend on three allotments that would be used during the spring period.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Winter)	
Nine allotments, 10,543 acres (5 percent of the planning unit).	
The current downward trend in forage condition is expected to improve initially (with normal precipitation) and continue to improve gradually for 20 years on four allotments (2 percent of the planning unit) if the proposal is implemented. On five allotments (3 percent of the planning unit), trend would likely remain static.	The downward trend in forage condition on these allotments is probably due to lack of precipitation. Precipitation has been less-than-average over the past 6 years (NOAA, 1973 to 1978). It is expected that forage condition trend would improve initially, after a few years of normal precipitation. The increases in key species that are predicted on four allotments (2 percent of the planning unit) as a result of reduced livestock grazing are expected to continue to improve the trend (Hutchings, 1953; BLM, 1979). On five allotments (3 percent of the planning unit), composition of key species would remain the same and trend would be static.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter)	
One allotment, 272 acres (less than 1 percent of the planning unit).	
The current downward trend in forage condition (with normal precipitation) is expected to improve initially and continue to gradually improve for the next 20 years after the proposal is implemented.	The downward trend in forage condition on these allotments is probably due to lack of precipitation. Precipitation has been less-than-average for the past 6 years (NOAA, 1973 to 1978). It is expected that forage condition trend would improve initially, after a few years of normal precipitation. The increases in key species that are predicted as a result of changing the season of use from summer to winter are expected to continue to improve the trend (Cook and Stoddard, 1963) .

3. Overall Assessment

On 90 percent of the planning unit, the proposed action would not substantially change present management with the exception of adjustments in the allowable utilization of plants. Approximately 60 percent annual use of forage plants would be allowed unit wide. Over-utilization of key species (60 percent or greater) has reduced valuable and productive plants to very low levels in the total vegetation composition. Because of this and 6 years of lower than average precipitation, present trend in forage condition is down. Management would begin with a deteriorated set of conditions. Key species composition would increase on 14 allotments (51,979 acres or 24 percent of the planning unit) where there would be reductions in the level of plant utilization and livestock would not be allowed to graze during the critical spring period each year. On these areas, forage species would be able to meet physiological requirements during the growth period. On 13 of the 14 allotments (30,820 acres or 14 percent of the planning unit), key species would increase from 200 to 300 percent. However, since they presently average only about 2 percent of the vegetation composition and would increase to only about 6 percent over a 20-year period, the increase would be so slight that there would not be noticeable changes in other vegetation parameters. The condition of riparian vegetation is not expected to change from 70 percent good, 16 percent fair, and 14 percent poor because the present heavy utilization would continue.

On one of the 14 allotments where rest seasoal-rotation grazing would be implemented and plants would receive periodic rest from grazing (21,159 acres or 10 percent of the planning unit), key species represent 15 percent of the total composition at present and would increase by about 50 percent to make up about 22 percent of the total vegetation composition within 20 years.

On 11 allotments (48,516 acres or 22 percent of the planning unit), the composition of key species would remain static at an average of 2 percent, and on 13 allotments (112,562 acres or 52 percent of the planning unit), it would decline from the present average of 38 percent because the degree of use on plants (presently 60 percent) would increase during the critical spring period with implementation of the proposed action. Studies by Cook (1971) indicate that under similar conditions in western Utah, desert plants can tolerate only about 25 percent utilization if grazed every spring and plant vigor would decline. The amount of decline that would result is unknown.

Changes in forage production, forage condition, and forage condition trend are expected to roughly correlate with changes in the composition of key species. No changes in composition are expected to be great enough to alter the overall appearance of vegetation types and subtypes in the planning unit.

Forage production would increase from 660 AUMs to 2,100 AUMs on 21,431 acres (10 percent of the planning unit), increase slightly on 14 percent of the planning unit, remain static on 22 percent and decline on 52 percent.

Precipitation has been below average for the past 6 years (NOAA, 1973 to 1978). Due partly to this, but also due to heavy livestock grazing, trend in forage condition is down unit wide. With return to normal precipitation, trend would be expected initially to go up somewhat, but over the long-term it would be downward on 52 percent of the planning unit, because the grazing use would continue to be heavy. The rate of change would be great enough to change forage condition classes during the next 20 years only on the 52 percent of the planning unit. The expected change would be a decrease in condition now classed as "good." On the 10 percent of that planning unit that would be under rest-rotational grazing, improvement in condition class would occur.

Forage condition is an overall indicator of vegetation based on the composition of desirable forage plants. The present and expected forage conditions are as follows:

	Present		Expected	
	Acres	Percent of Planning Unit	Acres	Percent of Planning Unit
Good	112,088	52	122,808	58
Fair	72,128	34	62,975	29
Poor	28,841	14	27,274	13
Total	213,057	100	213,057	100

Ground cover is related mainly to grazing intensity (i.e., percent utilization of plant species) and is inversely proportional to it (Kincaid, et al., 1964 and Rhodes, et al, 1964). Grazing intensity would increase and vegetation ground cover decrease on 59 percent of the planning unit.

Grazing intensity would remain the same or decrease (increase in vegetation ground cover) on the remainder of the unit.

4. Conclusion

The proposed action would actually be detrimental to vegetation on approximately 52 percent of the planning unit (112,562 acres) and would do very little to improve vegetation on 38 percent. Noticeable improvement would result on only about 10 percent of the area (21,159 acres).

E. IMPACTS ON ANIMAL LIFE

1. Introduction

This section describes the impacts of the proposal on elk, antelope, mule deer, sage grouse, the endangered Utah prairie dog, and trout. Analysis indicates that other species of wildlife found in the planning unit would not be significantly affected by the proposal and they are not discussed in this section.

2. Analysis of Impacts

The following tables show the probable impacts and rationale for predicting these impacts on mule deer, elk, antelope, sage grouse, Utah prairie dog, and fisheries.

ANALYSIS OF IMPACTS ON MULE DEER

Impacts	Rationale
NO LIVESTOCK GRAZING	
Two allotments, 475 acres (less than 1 percent of the planning unit).	
There would be an increase of 1 AUM for deer in the Dez Hickman Allotment. The Wildlife Allotment allocation would remain the same. This would provide for 1 additional deer for the winter season (5 months) and would provide for a total of 10 wintering deer in this component.	Present forage production on these allotments is 10 AUMs. No changes in forage production are expected. All 10 AUMs would be available for deer use.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit).	
The initial allocation for deer would remain the same as the estimated present use on Post Hollow, Fishlake and Cedar Grove allotments. It would be increased by 440 AUMs in the remaining allotments (see Appendix I-1). There would be no further increase allowed for the long term. This would provide for an increase of 117 deer for summer use and 328 deer for winter use. Those increases would be added to the base of 94 summer and 256 winter deer. Total deer numbers (795) in the component would become 584 winter deer and 211 summer deer. Forage for deer could decrease in 5 years and an adjustment of numbers could be needed.	There are presently 413 deer AUMs available in this component, and the proposal would allow for a total of 853 AUMs. The proposal would allow livestock grazing during periods critical to growth and reproduction at a higher than current actual use level. (Livestock actual use averages 67 percent of allocation between 1975-1977.) This would mean that utilization of important forage species would increase during critical periods by implementing the proposal. This may cause a decline of these species (Cook, 1971) and a decline in forage production.
IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring)	
One allotment, 21,159 acres (10 percent of the planning unit).	
The proposal would provide for no initial increase to the 104 deer AUMs (164 winter deer). The long-term allocation would be increased by 385 AUMs. This would provide for no deer numbers above present estimated use for the initial allocation, but would support 130 more winter deer for the long-term.	As the proposed chaining begins to provide more deer forage, there would be an increase allowed in deer AUMs commensurate with this forage. There could be no initial increase because there is not sufficient forage to provide for more deer than the estimated current use. The total proposed long-term allocation would be 489 AUMs.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter)	
Eleven allotments, 54,294 acres (25 percent of the planning unit.)	
The proposal would provide for an initial increase in this component. It would amount to 346 AUMs or 387 deer (42 summer and 375 winter) initially and over the next 20 years. This increase would be added to the 422 AUMs presently used by 15 summer (13 AUMs) and 466 winter (409 AUMs) deer. In the component, forage would be provided for 27 summer and 841 winter deer (12 new summer and 375 new winter deer). However, on the Torrey Town Allotment, deer use would be reduced from 47 to 10 AUMs. That reduction would be mostly winter deer (5 month season). The 10 AUMs would require a reduction in deer numbers from 59 to 13 animals.	There is available forage for 387 deer (768 AUMs) over the next 20 years (see Appendix I-1 for breakdown by allotment). The initial and long-term increases are proposed to be the same (346 AUMs).

ANALYSIS OF IMPACTS ON MULE DEER (concluded)

Impacts	Rationale
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Winter)	
Nine allotments, 10,543 acres (5 percent of the planning unit).	
A reduction in deer numbers (48 deer) may be necessary on seven allotments (Busenbark, Government Creek, Grover, Horse Pasture, River, Teasdale Bench, and Teasdale Ranch) with the initial level of forage allocation. Overall, there would be a 13 AUM increase in forage for deer on the allotments under this component. This would provide for 15 more deer for the winter months. This would be maintained over a 20-year period.	There is forage available for 184 AUMs, 15 more deer than are currently (199) wintering on these nine allotments. The improvement of the forage quantity and quality would not be sufficient to provide for more deer than this initial number during the next 20 years.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter)	
One allotment, 272 acres (less than 1 percent of the planning unit).	
There would be no change on this allotment. The eight AUMs of deer forage (9 wintering deer) are proposed to be the same initially and for the next 20 years.	Eight AUMs are currently being used by wintering deer. This same number would be initially allocated by the proposal and would be available for the next 20 years.

ANALYSIS OF IMPACTS ON ELK

Impacts	Rationale
NO LIVESTOCK GRAZING	
Two allotments, 475 acres (less than 1 percent of the planning unit).	
No impacts.	Elk use has not been verified in this area.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit).	
One hundred and eighty elk presently use the following seven allotments under this component: Bicknell Spring, Cedar Peak, Cedar Grove, Cyclone Co-op, Co-op, Cyclone, and Fishlake. The largest amount of elk use (65 percent occurs on the Cedar Grove Allotment. An increase of 111 AUMs would provide for an additional 42 elk. The additional elk would be part of the newly established Boulder Mountain herd and would use the Hare Lake and Smooth Knoll and part of the Bicknell Spring and Cedar Peak allotments during the winter. Elk would then use nine allotments (81,963 acres of 38 percent of the planning unit) under this component. Forage available for elk use could decline during the initial 5 years of the proposed action and adjustments in numbers could be required. The possible amount of decline is unknown.	These allotments would have sufficient wildlife AUMs and adequate forage as provided by the proposal. However, the proposal would allow livestock grazing during periods critical to growth and reproduction at a higher than current actual use level. (Livestock actual use averaged 67 percent of allocation between 1975-1977.) This would mean that utilizaton of important forage species would increase during critical periods by implementing the proposal. This may cause a decline of these species (Cook, 1971) and a decline of forage production.
IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring)	
One allotment, 21,159 acres (10 percent of the planning unit).	
The proposed allocation of 53 AUMs (40 elk) for the life of the proposal would provide no change from the present situation. However, projected improvement in vegetation condition would be expected to improve elk habitat.	This area is primarily an intermediate wintering area and spring and fall migration route for elk. The proposal would improve forage condition, variety, quantity, and availability for elk use. Fence-building stipulations would minimize the projects' adverse effect, and the season of livestock use is compatible with the season of elk use. Studies indicate that vegetation manipulation projects would increase the quantity and improve the quality of elk forage (Aro, 1971). Studies have shown that resting pastures also improves elk habitat (Skovlin, et al., 1968).
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter)	
Eleven allotments, 54,294 acres (25 percent of the planning unit).	
No impacts.	Elk use has not been verified in this area.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Winter)	
Nine allotments, 10,543 acres (5 percent of the planning unit).	
No impacts.	Elk use has not been verified in this area.

ANALYSIS OF IMPACTS ON ELK (concluded)

Impacts	Rationale
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (winter)	
One allotment, 272 acres (less than 1 percent of the planning unit).	
No impacts.	Elk use has not been verified in this area.

ANALYSIS OF IMPACTS ON ANTELOPE

Impacts	Rationale
NO LIVESTOCK GRAZING	
Two allotments, 475 acres (less than 1 percent of the planning unit).	
No impacts.	Antelope do not inhabit this area.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit). All allotments except Lyman and Hector Hollow support antelope.	
Antelope inhabit 13 of these 15 allotments (122,275 acres of 57 percent of the planning unit). The proposal provides for antelope to continue to use 460 AUMs. Additional water sources would provide more water for antelope use. Forage available to antelope could decline during the initial 5 years of the proposed action and adjustments in numbers could be required.	The proposed pipelines, water troughs, reservoirs modifications, and new reservoirs would provide new and more reliable sources of water for antelope. The proposal would allow livestock grazing during periods critical to growth and reproduction at a higher than current actual use level. (Livestock actual use averaged 67 percent of allocation between 1975-1977.) This would mean that utilization of important forage species would increase during critical periods by implementing the proposal. This may cause a decline of these species (Cook, 1971) and forage production.
IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring)	
One allotment, 21,159 acres (10 percent of the planning unit).	
No adverse impacts; antelope habitat would be improved.	The season of use proposed, consolidation of allotments, change of class of livestock from sheep to cattle, rest system of grazing, proposed water developments, and vegetation manipulation project would all improve antelope habitat, even though no change in the antelope allocation (40 animals for 8 AUMs) is proposed.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter)	
Eleven allotments, 54,294 acres (25 percent of the planning unit).	
The Loa Winter, Deleeuw, Long Hollow, Terza Flat, and North Fremont allotments currently provide 149 AUMs for antelope. One hundred and forty-nine AUMs of forage would be provided for antelope under the proposed action.	The forage allocation currently provided for antelope (149 AUMs) would continue to be used by antelope.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Winter)	
Nine allotments, 10,543 acres (5 percent of the planning unit).	
No impacts.	Antelope do not inhabit this area.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter)	
One allotment, 272 acres (less than 1 percent of the planning unit).	
No impacts.	Antelope do not inhabit this area.

ANALYSIS OF IMPACTS ON SAGE GROUSE

Impacts	Rationale
NO LIVESTOCK GRAZING	
Two allotments, 475 acres (less than 1 percent of the planning unit).	
No impacts.	Sage grouse are not found in this area.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit). All allotments except Lyman and Hector Hollow support sage grouse.	
Sage grouse inhabit 13 of these 15 allotments (122,275 acres or 38 percent of the planning unit). Sage grouse numbers may decline. The extent and magnitude are unknown.	Possible increased grazing during the spring could reduce key and other desirable forage species and affect vegetation needed for sage grouse. Succulent green forage is critical during the brooding season (Jarvis, 1974). Without succulent forage, the survival rate of sage grouse chicks could decline.
IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring)	
One allotment, 21,159 acres (less than 1 percent of the planning unit).	
The sage grouse population is expected to increase by an unknown number.	Increased supplies of succulent vegetation (see Vegetation section of this chapter) and better distribution of water would provide better habitat for sage grouse.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter)	
Eleven allotments, 54,284 acres (25 percent of the planning unit).	
No adverse impacts are expected.	The vegetation would improve in vigor, quantity, and quality under the proposal (see Vegetation section of this chapter).
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Winter)	
Nine allotments, 10,543 acres (5 percent of the planning unit).	
No impacts.	Sage grouse are not found in this area.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter)	
One allotment, 272 acres (less than 1 percent of the planning unit).	
No impacts.	Sage grouse are not found in this area.

ANALYSIS OF IMPACTS ON ENDANGERED UTAH PRAIRIE DOG

Impacts	Rationale
NO LIVESTOCK GRAZING	
Two allotments, 475 acres (less than 1 percent of the planning unit).	
No impacts.	Prairie dogs are not found in this area.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit). Utah prairie dogs are found on the Cedar Grove, Cyclone Co-op, Cyclone, Co-op, Bicknell Spring, Cedar Peak, Hare Lake, Smooth Knoll, Flat Top, and Bicknell Winter allotments (98,339 acres or 46 percent of the planning unit).	
Utah prairie dogs numbers could decline. The magnitude is unknown but could be significant.	Possible increased grazing could reduce key and other desirable forage species and affect vegetation that is needed by prairie dogs during the critical lactating period (Crocker-Bedford, et al., 1975).
IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring)	
One allotment, 21,159 acres (10 percent of the planning unit).	
No impacts.	Prairie dogs are not found in this area.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter)	
Eleven allotments, 54,294 acres (25 percent of the planning unit).	
Few if any adverse impacts are expected.	Most of the prairie dogs in this area are on private lands adjacent to public land. The proposal would enhance the vegetation of the area, thereby providing more food.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Winter)	
Nine allotments, 10,543 acres (5 percent of the plannint unit).	
No impacts.	Prairie dogs are not found in this area.
CONTINUE WITH CONTINUOUS SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter)	
One allotment, 272 acres (less than 1 percent of the planning unit).	
No impacts.	Prairie dogs are not found in this area.

ANALYSIS OF IMPACTS ON TROUT

Impacts

All components of the proposed action except 1) the No Livestock Grazing and 2) Implement Two-Pasture Rest-Seasonal Rotation Grazing and Consolidation of Allotment (spring) contain streams with fisheries. The four components contain 36 allotments, 191,473 acres (89 percent of the planning unit).

Although 18 allotments have approximately 20 miles of stream, only 10 allotments contain fisheries (11.8 miles). The chart below shows the anticipated impacts to trout habitat. These impacts which deteriorate fisheries would have adverse impacts on trout numbers and size but those impacts are not quantifiable with the available data.

Component, Allotment, and Streams or Reservoirs	Miles of Stream	Stream-Reservoirs Habitat Condition[a]	
		Present	Predicted in 20 Years
Continue Existing Continuous-Seasonal Grazing (Spring, Fall, Winter)			
King Sheep			
Pine Creek	2.0	Low Fair	Poor
Post Hollow			
Riley Creek	1.25	High Fair	Fair
Continue With Continuous-Seasonal Grazing With Adjustment of Grazing Allocation (Winter)			
Deleeuw			
Fremont R.	1.0	Low Fair	Poor
Long Hollow			
Road Creek	0.25	Low Fair	Poor
North Fremont			
Fremont R.	1.5	Low Fair	Poor
Mill Meadow Reservoir	--	Good	Good
Continue With Continuous-Seasonal Grazing Adjusted By Utilization (Winter)			
Donkey Hill			
Fish Creek	0.15	Poor	Poor
Grover			
Fish Creek	0.15	Poor	Poor
River			
Fremont R.	4.25	Good	High Fair
Spring Branch			
Fish Creek	0.25	Poor	Poor
Continue With Continuous-Seasonal Grazing With Adjustment of Season (Winter)			
Hickman			
Fremont R.	1.0	High Fair	Fair
Total	11.8		

Rationale

Livestock grazing could be increased 41 percent above the apparent 59 percent cattle use in the Bicknell Winter Allotment and sheep use could increase 67 percent. There would be no change in season of use and no rest from yearly heavy use of the riparian zone plants, both in the initial action and long term. On the entire planning unit, livestock use could increase by 33 percent over the level used during the 1975 to 1977 period. Specific grazing impacts would be removal/elimination of riparian streambank vegetation and physical trampling of the streambank vegetation and physicial trampling of the streambanks by livestock.

In grazed areas, these impacts would deteriorate conditions over the existing situation since they would continue to reduce or eliminate key resource parameters, which are the limiting factors to productive and self-sustaining aquatic/ riparian habitats and fisheries, i.e., streambank vegetation, cover, streambank soil stability, pool and water quality (less depth, cover, velocity, oxygen, high temperatures, sedimentation). Specific impacts to these resource parameters were measured by Marcuson (1970) and Gunderson (1968). Appendix III-1 shows a summary of their findings.

An eight-year study by BLM on Big Creek in Rich County has shown that stream riparian zones will continue to be impacted from grazing unless specific riparian pasture grazing systems and protection are provided. It has also shown that after four years of rest and recovery inside an exclosure, good stream habitat conditions were set back four years to previous poor conditions when trespass livestock used the exclosure for only a 6-week period in the spring (Duff, 1978).

Mueggler (1975) indicates that 6 to 8 years of protection from grazing are necessary to restore plant vigor and woody riparian plants. This is also supported by studies on Big Creek, Utah (Duff, 1977). Similar studies in Idaho have also found that 5 to 10 years are necessary for the improvement of streambottom gravels, once the sediment generating impact was alleviated (Platts, 1978). This period is relative to the scope and magnitude of sediment sources, but considering that streams act as a dynamic continuum, water quality impacts from upstream use areas would continue to be felt in the rested pasture reach of a stream. In essence, Platts (1978) indicates ". . . rotation type grazing systems may rest pastures but not streambottoms."

Generally, riparian vegetation begins growth earlier in the spring and continues growth later into the fall than most upland range plants. During this time, the plants are more palatable than dried range plants and are actively sought by cattle (Platts and Rountree, 1972). Because of this, vegetation in meadows and along streams is invariably closely utilized under any stocking rate or system of grazing. Removal of more than 60 percent of crown can significantly reduce the regrowth potential of some species (Hormay, 1970).

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[a] See Figure 2-24 for examples of trout habitat Conditions.

ANALYSIS OF IMPACTS ON TROUT (concluded)

Impacts	Rationale
	Studies conducted by Platts and Rountree (1972) question whether riparian vegetation can be restored on previously overgrazed pastures through the use of rotation grazing management systems. These authors concluded that riparian vegetation receiving 1 year of rest in a rotation system did not recover adequately. Thus, according to their findings, in some cases pastures may increase in forage during a yearlong rest, but riparian vegetation and streambanks do not recover. This type of grazing prevents the natural replacement of woody riparian species, i.e., old cottonwoods by younger trees in riparian zones. Such use may be detrimental to wildlife, aesthetic, recreational, or other values. About the only way to preserve such values is to fence off the area from grazing. Reducing livestock or adjusting the grazing season will not solve such a problem (Hormay, 1976).

3. Overall Assessment

Deer

The proposed action continues heavy utilization of key deer winter forage (particularaly shrub species) on 184,738 acres (86 percent of the planning unit).

Composition of key and other desirable plant species such as bitterbrush and fourwing saltbush is expected to decline. The present deer population on 195,111 acres (about 92 percent of the unit) is estimated to be 996. They utilize 946 AUMs annually. The proposal provides for this plus an additional 800 AUMs. This would accommodate about 900 more deer for a total winter population of 1796.

On the remaining 8 percent of the unit (17,946 acres) there would be a deficit of 85 AUMs annually (equivalent to 95 deer). Thus, in this area, overutilization of crucial winter habitat would occur immediately.

On the larger area (92 percent), should the deer population continue to increase, the crucial winter range would be over used in about 5 years.

Optimal levels of mule deer (about 4,013) throughout the unit utilized about 4,242 AUMs in the recent past and is expected to reach that level in the next 5 years (Bowden, 1979). In the total unit area there would be about 1,930 less AUMs available than deer needs projected by DWR within the next 5 years. Deer winter range would rapidly begin to decline as carrying capacity is exceeded (after about 5 years), and the stressed deer herd would conflict with livestock with a consequent weight loss, low fawn survival rate, or die off.

Elk

The proposed action provides for increased forage of 111 AUMs on 31,257 acres (15 percent of the planning unit) for winter use by the 42 elk from the new elk herd on the Boulder Mountains. Sufficient vegetation (406 AUMs) would be provided for the 220 existing and the 42 additional elk. These 406 AUMs would also meet the projected long term needs for elk on public land in the unit. There is an expected decrease in key species of vegetation, but the impacts on the elk population is unknown.

Antelope

The proposed action provides vegetation (617 AUMs) sufficient for current antelope (750 animals). New water developments and the chaining would improve antelope habitat, but the proposed decline in the vegetation in the 122,275 acres (57 percent of the planning unit) of antelope spring range is expected to require a readjustment of grazing animal carrying capacity. The expected decline in key plant species on the 54,294 acres (25 percent of the planning unit) antelope winter range would also require an adjustment in the carrying capacity. The amount of adjustment is not quantifiable but is expected to be insignificant.

Sage Grouse

Reduction of key and other desirable plant species in the spring, during nesting and the critical brooding period, would adversely affect young sage grouse survival on 125,875 acres (59 percent of the public land in the planning unit). Sage grouse nesting occurs from mid-April to early June (Jarvis, 1974). If disturbed, sage grouse hens sometimes abandon their nests during egg laying and incubation. Livestock use prior to June 15th could result in disturbance of nesting hens and thus reduce nesting success. Grazing during the critical growing season of key plant species and other succulent forage would cause a reduction in these species which are a necessary factor to chick survival after hatching. The amount of expected losses is unknown. The improved water conditions would expand sage grouse range.

Endangered Utah Prairie Dog

The key to survival for this endangered species is to have cool season grasses available during lactation period and cool season grasses and other succulent vegetation available as soon as the young start leaving their burrows. Livestock grazing during the spring period would result in competition between livestock and prairie dogs for succulent vegetation. This would curtail expansion of existing colonies, the loss of satellite colonies and could cause losses of animals during periods of stress such as drought. The decline of key species and other succulent vegetation species would also require prairie dogs to forage greater distances from the protection of their burrows which would make them more susceptible to predation.

Fish

The quantity or quality of water is not predicted to change because vegetation ground cover would remain essentially unchanged. Numerous studies show that cattle trampling and concentrating along stream banks would, however, break off overhanging banks and continue to suppress cover and shade along creek banks. The quality of habitat for fish would be reduced which, in turn, would curtail production of fish and prevent optimum growth. The fisheries habitat condition would be expected to change as shown below:

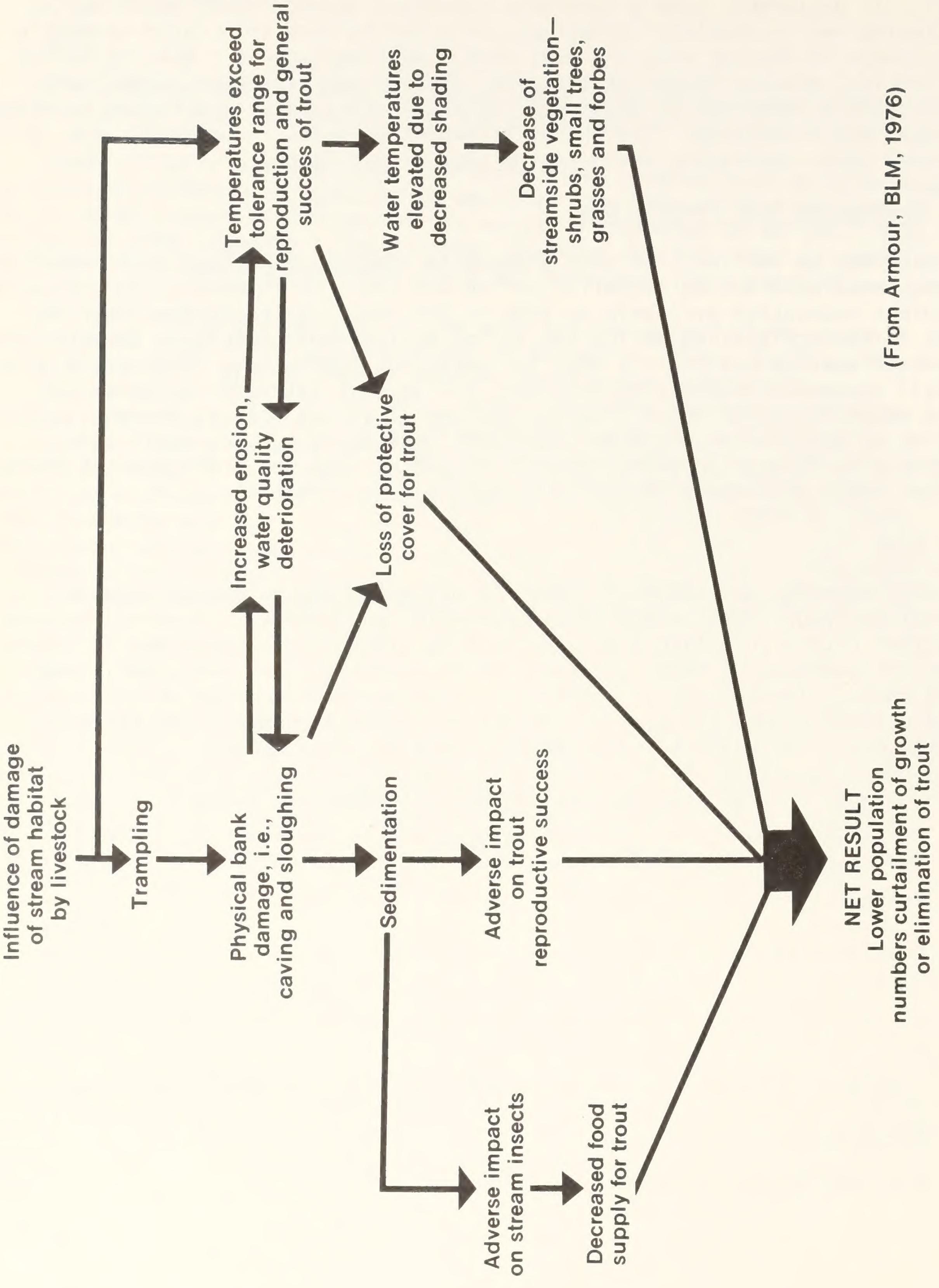
Approximate Miles in Habitat Condition Class

	Good	Fair	Poor
Present	4	6	1
Predicted in 20 years	0	5	7

Figure 3-1 diagrams how these changes would affect trout populations.

4. Conclusions

Big game forage is summarized below:


Influence of damage of stream habitat by livestock
Trampling
Physical bank damage, i.e., caving and sloughing
Sedimentation
Adverse impact on trout reproductive success
Adverse impact on stream insects
Decreased food supply for trout
Increased erosion, water quality deterioration
Loss of protective cover for trout
Temperatures exceed tolerance range for reproduction and general success of trout
Water temperatures elevated due to decreased shading
Decrease of streamside vegetation— shrubs, small trees, grasses and forbes
NET RESULT
Lower population numbers curtailment of growth or elimination of trout

(From Armour, BLM, 1976)

CONCEPTUALIZED FLOW CHART OF ADVERSE EFFECTS OF STREAM HABITAT DAMAGE BY LIVESTOCK ON TROUT POPULATIONS

FIGURE 3-1

		Current Use		Long-Term Allocation		Long-Term Projected Need	
		Number	AUMs	Number	AUMs	Number	AUMs
Deer	Summer	109	1,127	238	2,312	4,013	4,242
	Winter	1,103		1,930			
Antelope	Summer	394	617	394	617	394	617
	Winter	750		750		750	
Elk	Summer	20	295	20	406	262	406
	Winter	200		242			

On eight allotments (17,946 acres), overuse of the existing vegetation would occur and existing wintering deer numbers would not be supported. This would result in an immediate reduction of vegetation on those winter ranges with a resulting deer die off.

Within 5 years, because of the projected increase in the deer population and decrease in the vegetation resource there would be vegetation over-utilization on most all deer winter ranges in the planning unit. This would result in an inadequate forage supply for the optimum number of deer proposed by the BLM MFP and projected by DWR to be present in the planning unit by 1985.

Elk

Even though the projected decrease in key forage species is predicted for elk use areas the impact upon this mobile and migratory herd is unquantifiable, but could mean a slight reduction in elk numbers.

Antelope

The predicted decline in vegetation key species in both summer and winter ranges for antelope would result in reduced carrying capacity of the winter range because of over-utilization of key browse species (black sagebrush and winterfat). This would result in reduced survival of an unquantifiable amount of antelope.

Sage Grouse

Sage grouse numbers would be reduced from existing numbers as vigor of key and desirable plants, and vegetation ground cover decrease. The magnitude of this reduction is unknown.

Endangered Utah Prairie Dog

The survival rate of Utah prairie dog litters would decline which would cause a decrease in prairie dog populations, a reduction in the population growth rate or both. Insufficient data are available to determine whether or not the continued existence of the Utah prairie dog would be jeopardized. A U.S. Fish and Wildlife Service (USFWS) formal biological opinion has been requested on this matter and will be included in the final environmental statement. A copy of an informal consultation reply from USFWS is included in Chapter 9.

Fish

The number and size of trout fisheries would deteriorate on approximately 11 miles of streams where livestock would continue to graze the riparian habitat.

G. ARCHAEOLOGICAL RESOURCES

1. Introduction

This section analyzes the impacts that the proposed action would have on archaeological resources.

2. Analysis of Impacts

The following table shows the probable impacts and rationale for predicting these impacts on archaeology.

ANALYSIS OF IMPACTS ON ARCHAEOLOGICAL RESOURCES

Impacts	Rationale
ALL COMPONENTS OF THE PROPOSAL	
Thirty-nine allotments, 213,587 acres (all of the planning unit)	
Proposed range developments on 13 allotments would cause ground distrubance on approximately 4,840 acres. Twenty-three sites have been recorded in seven of the allotments in the planning unit. Little or no archaeological inventory has been done in the remaining allotments, but additional sites are assumed to exist in the area. The proposed range developments involve ground-disturbing actions resulting from chaining and the construction and use of pipelines, water troughs, reservoirs, and fences. The specific causes of adverse impacts to archaeological resources are the ground-disturbing actions during chaining and construction, livestock trampling around water troughs, and inundation of areas due to reservoirs. Even with the implementation of proposed mitigation, ground-disturbing actions could inadvertently damage or destroy archaeological resources resulting in a loss of scientific and educational information.	Experience has shown that even with implementation of design features and required inventories, as described as part of the proposal, accidental losses of archaeological remains could occur.

3. Overall Assessment

Twenty-three sites have been recorded on seven allotments within the planning unit. Limited archaeological resource inventory has been done on the remaining allotments, but additional sites are assumed to exist in the area. Even with the implementation of proposed mitigation, ground-disturbing actions could inadvertently damage or destroy cultural resources on approximately 4,840 acres, resulting in a loss of scientific and educational information. These ground-disturbing actions involve construction activities, livestock trampling around water sources, and inundation of areas due to reservoirs.

The intensive archaeological resource inventory required by the proposed mitigation would be a beneficial impact to the resource as it would result in the recordation and documentation of previously unknown areas and sites.

4. Conclusions

There could be inadvertent loss to archaeological resources. The extent is unknown. Some beneficial effects would be realized as archaeological materials and sites may be found as a result of mandatory surveys prior to implementing range developments.

H. VISUAL RESOURCES

1. Introduction

This section describes the anticipated impacts the proposal would have on visual resources (as defined in Visual Resource Management Class areas) within the Parker Mountain Planning Unit.

2. Analysis of Impacts

The following table shows the possible impacts and rationale for projecting the impacts to visual resources.

ANALYSIS OF IMPACTS ON VISUAL RESOURCES

Impacts	Rationale
The NO LIVESTOCK GRAZING and CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter) components would not affect visual resources.	
Under the CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter), IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring), and CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF ALLOCATION (Winter) components, the following 15 allotments would be affected: Bicknell Spring, Cedar Peak, Hare Lake, Smooth Knoll, Bicknell Winter, Flat Top, Cedar Grove, Cyclone Co-op, Co-op, Cyclone, Seven Mile, Loa Winter, Deleeuw, Long Hollow, and Terza Flat. These allotments total 138,078 acres (65 percent of the planning unit).	
All proposed range developments would be located in Visual Resource Management (VRM) Class III or IV areas. In all cases, the visual modification would be compatible with the management objective for the VRM Class in which it would occur.	Vegetation and ground disturbance and/or the presence of structures resulting from the proposed modification of 30 reservoirs and construction of four reservoirs, 16 miles of pipeline, 15 miles of fencing, nine water troughs, and 4,800 acres of chaining and seeding, would cause a visual modification that would not exceed acceptable landscape feature modification for VRM Class III and IV areas. (See Appendix III-2).
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Winter)	
The following three allotments would be affected: Grover, Donkey Hill, Government Creek. This includes 4,791 acres or 2 percent of the planning unit.	
The exclosures proposed in the Grover and Government Creek allotments would be located in either VRM Class III or IV areas. The visual modification that would occur would be compatible with the management objectives for both VRM Classes.	Vegetation disturbance and the presence of structures resulting from proposed construction of two exclosures would cause a visual modification that would not exceed acceptable landscape feature modification for VRM Class III and IV areas.
The exclosure proposed in the Donkey Hill allotment would be located in either VRM Class II or III areas. The visual modification that would occur would not be compatible with VRM Class II management objectives, but would be compatible with VRM Class III management objectives.	Vegetation disturbance and the presence of structures resulting from proposed construction of one exclosure would cause a visual modification that would exceed acceptable landscape feature modification for VRM Class II areas, but would not exceed acceptable modification for VRM Class III areas.

3. Overall Assessment

Proposed range developments would affect the visual resource. Vegetation and ground disturbance and/or the presence of structures resulting from the proposed modification of 30 reservoirs and construction of four reservoirs, 16 miles of pipeline, 15 miles of fencing, nine water troughs, 4,800 acres of chaining and three exclosures would cause a visual modification of the landscape.

All but one proposed range developments would be located in Visual Resource Management (VRM) Class III or IV areas, and the visual modifications would be compatible with VRM management objectives. (See Appendix III-2). The exclosure proposed on the Donkey Hill Allotment would be located in a VRM Class II or III area. The visual modification would not be compatible with VRM Class II management objectives, but would be compatible with VRM Class III management objectives.

4. Conclusions

The only adverse impact to visual resources would occur if the exclosure proposed in the Donkey Hill Allotment was located in a VRM Class II area. Visual modification from the exclosure would not be compatible with VRM Class II management objectives. In all other cases, the visual modification from proposed range developments would be compatible with VRM management objectives.

H. RECREATION

1. Introduction

This section describes the anticipated impacts the proposal would have on hunting and fishing opportunities (i.e., quality and number of deer, elk, antelope, and sage grouse hunter days, and trout fisherman days) presently provided by the Parker Mountain Planning Unit.

2. Analysis of Impacts

The following table shows the anticipated changes and the rationale for predicting these changes that would occur to hunting and fishing opportunities.

ANALYSIS OF IMPACTS ON RECREATION

Impacts	Rationale
Deer Hunting	
Thirty-nine allotments, 213,057 acres (entire planning unit).	
With the present hunter success ratio, the potential increase in deer numbers would provide for 9,016 additional hunter days initially and 13,355 additional hunter days over the long term, above the 12,701 hunter days presently provided by the planning unit.	Hunting demand for deer is high. Historically in the area any increase in deer has resulted in an increase in hunter success, attracting more hunters to the area and resulting in an increase in hunter days (UDWR, 1978). The proposal would allocate 800 additional AUMs for deer initially and 1,185 additional AUMs for deer over the long term above the current estimated use, resulting in a potential increase in deer annually and over the long term.
Antelope Hunting	
Three of the six components of the proposal would be affected. These include CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter), IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring), and CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter). The following 19 allotments would be involved: Bicknell Spring, Cedar Peak, Hare Lake, Smooth Knoll, Bicknell Winter, Flat Top, King Sheep, Cedar Grove, Cyclone Co-op, Co-op, Cyclone, Fishlake, Post Hollow, Seven Mile, Loa Winter, eleeuw, Long Hollow, Terza Flat, and North Fremont. This would include 165,365 acres (78 percent of the planning unit).	
The proposal would not impact antelope hunting opportunities (117 hunter days) presently provided by the planning unit.	Hunting demand for antelope is high. Historically in the area any increase or decrease in antelope has resulted in an increase or decrease in available hunting permits and hunter days (UDWR, 1978). The proposal would not change the AUMs currently allocated for antelope, and would have no affect on antelope numbers.
Elk Hunting	
Two of the six components of the proposal would be affected. These include CONTINUE EXISTING CONTINUOUS SEASONAL-GRAZING (Spring, Fall, Winter) and IMPLEMENT TWO-PASTURE REST SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring). The following 10 allotments would be involved: Bicknell Spring, Cedar Peak, Hare Lake, Smooth Knoll, Cedar Grove, Cyclone-Co-op, Cyclone, Co op, Fishlake, and Seven Mile. This would include 103,122 acres (48 percent of the planning unit).	
With the present hunter success ratio, the potential increase in elk numbers would provide for 339 additional hunter days initially and over the long-term, above the 911 hunter days presently provided by the planning unit.	Hunting demand for elk is high. Historically in the area any increase in elk has resulted in an increase in available hunting permits and hunter days (UDWR, 1978). The proposal would allocate 111 additional AUMs for elk initially and over the long-term above the current estimated use, resulting in a potential increase in elk initially and over the long-term.

ANALYSIS OF IMPACTS ON RECREATION (concluded)

Impacts	Rationale
Sage Grouse Hunting	
Three of the six components of the proposal would be affected. These include: CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter), IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring), and CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF ALLOCATION (Winter). The following 17 allotments would be involved: Bicknell Spring, Cedar Peak, Hare Lake, Smooth Knoll, Bicknell Winter, Flat Top, King Sheep, Cedar Grove, Cyclone Co-op, Cyclone, Co-op, Fishlake, Post Hollow, Seven Mile, Loa Winter, Deleeuw, Long Hollow, Terza Flat and North Fremont. This would include 162,014 acres, (76 percent of the planning unit).	
The proposal would result in an unquantified decrease in quality and number of hunter days below the 1,119 sage grouse hunter days presently provided by the planning unit.	Hunting demand for sage grouse is high. Historically in the area, any decrease in sage grouse has resulted in a decrease in hunter success, attracting less hunters to the area and resulting in a decrease in hunter days (UDWR, 1976). The proposal may result in an unquantified decrease in sage grouse numbers on all affected allotments except Seven Mile, where an unquantified increase in sage grouse numbers is anticipated. The overall effect within the planning unit would be an unquantified decrease in sage grouse numbers.
Trout Fishing	
The NO LIVESTOCK GRAZING and IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENT (Spring) components would not be affected. The following 11 allotments of the remaining four components would be affected: King Sheep, Post Hollow, Deleeuw, North Fremont, Loa Winter, Long Hollow, River, Grover, Donkey Hill, Spring Branch, and Hickman.	
The proposal would result in an unquantified decrease in quality and number of fisherman days provided by Pine Creek, Riley Creek, the Fremont River, Road Creek, and Fish Creek. Fishing opportunities provided by Mill Meadow Reservoir would not be impacted. Overall, the proposal would result in an unquantified decrease in quality and number of fisherman days below the 3,000 fisherman days presently provided by the planning unit.	Any decrease in trout production (number and size) would result in a decrease in fisherman success, attracting less fishermen to the area, resulting in a decrease in fisherman days. The proposal would continue an unquantified decline in trout production in all fisheries except Mill Meadow Reservoir.

3. Overall Assessment

The basis of impacts on recreation would include any change in management or allocation that would alter numbers of deer, antelope, elk, and sage grouse available for hunting and trout available for fishing.

The analysis assumes that with present numbers of game and fish, the planning unit is providing a certain amount of hunter-fisherman success, which results in the present number of hunter-fisherman days. Hunting and fishing demand is high. With any increase or decrease in game and fish numbers, the planning unit would provide for a corresponding increase or decrease in hunter-fisherman success and days.

With the present hunter success ratio, the potential increase in deer numbers resulting from the proposed change in allocation would provide for 9,016 additional deer hunter days initially and 13,355 additional deer hunter days over the long term above the 12,701 hunter days presently provided by the planning unit.

With the present hunter success ratio, the potential increase in elk numbers resulting from the proposed change in allocation would provide for 339 additional elk hunter days initially and over the long-term above the 911 hunter days presently provided by the planning unit.

A potential unquantified decrease in sage grouse numbers resulting from the proposal would result in an unquantified decrease in sage grouse hunting success and resultant hunter days below the 1,119 hunter days presently provided by the planning unit.

The proposal would not affect existing antelope numbers, and would therefore not impact existing antelope hunting opportunities.

The proposal would result in an unquantified decrease in quality and number of fisherman days provided by Pine Creek, Riley Creek, the Fremont River, Road Creek, and Fish Creek. Fishing opportunities provided by Mill Meadow Reservoir would not be impacted. Overall, the proposal would result in an unquantified decrease in quality and number of fisherman days from the 3,000 fisherman days presently provided by the planning unit.

4. Conclusions

As a result of the proposal, recreation values within the Parker Mountain Planning Unit would be affected as follows: 1) the planning unit would provide for 9,016 additional deer hunter days initially and 13,355 additional deer hunter days over the long-term above the 12,701 hunter days presently provided; 2) the planning unit would provide for 339 additional elk hunter days initially and over the long-term, above the 911 hunter days presently provided. There would be no change from the 117 antelope hunter days presently provided. The planning unit would provide an unquantified decrease in sage grouse hunting success and resultant hunter days below the 1,119 hunter days presently provided. The planning unit would provide an unquantified decrease in fisherman success and resultant fisherman days below the 3,000 fisherman days presently provided.

J. LIVESTOCK GRAZING

1. Introduction

This section describes the anticipated impacts the proposal would have on livestock grazing. Major impacts would result from loss of AUMs and could require certain operators to purchase supplementary feed for their livestock.

2. Analysis of Impacts

The following table shows the probable impacts and rationale for projecting these impacts on livestock grazing.

ANALYSIS OF IMPACTS ON LIVESTOCK GRAZING

Impacts	Rationale
NO LIVESTOCK GRAZING	
Two allotments, 475 acres (less than 1 percent of the planning unit).	
There would be no impact to livestock grazing within 20 years by implementing the proposal.	Livestock have not been licensed to graze the Wildlife and Dez Hickman allotments since at least 1965 and 1970 respectively. This situation would continue.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit).	
This component would involve 69 separate livestock operators. Grazing for the past several years has been at approximately 67 percent (5,953 AUMs) of allocation (8,939 AUMs), so it is possible that actual grazing use could increase by 33 percent of 2,986 AUMs. Under the higher level of grazing, livestock production (e.g., calf survival and pounds of weight gain per AU) could decline (Cook, 1966).	The proposal is to allow livestock grazing at 100 percent of current allocation. Actual grazing use could increase by 33 percent. If livestock were to graze at 100 percent of the allocation, forage production could decline during the initial 5 years and lead to poor nutrition for livestock. Under the proposed action, adjustments in livestock grazing allocation could be made after 5 years.
IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS	
Five allotments, 21,159 acres (10 percent of the planning unit).	
Substantially reducing livestock grazing substantially initially would mean that 23 livestock operators may need to obtain additional feed to feed their livestock for eleven years after the proposal would be implemented. (The proposed reductions vary from 100 percent reduction in year 3 to 3 percent reduction in year 10. See Table 1-5 for estimated interim and long-term grazing allocation). The additional forage production that is predicted for this component after 11 years may add stability to the 23 livestock operations for the long term.	Experience has shown that livestock operators in this area are more likely to obtain additional feed from other sources or to make other changes necessary to continue their yearly operation rather than sell. This probably results from the users' strong historical ties to the livestock industry as well as the geographic area.
Changing the season of livestock use from winter to spring may be an inconvenience for the five livestock operators involved.	
Changing kind of livestock from sheep to cattle may be an inconvenience to the two sheep operators concerned.	

ANALYSIS OF IMPACTS ON LIVESTOCK GRAZING (concluded)

Impacts	Rationale
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter)	
Eleven allotments, 54,294 acres (25 percent of the planning unit).	
The reduction of livestock allocation by approximately 50 percent for 20 years would mean the 33 livestock operators may need to obtain additional feed for their livestock. Currently 2,772 AUMs are actually used by 394 cattle and 4,284 sheep on these allotments. With implementation of the proposal, approximately 202 cattle and 2,522 sheep would be authorized to use about 1,426 AUMs. This would be approximately an 8 percent reduction from actual livestock use.	Experience has shown that livestock operators in this area are more likely to obtain additional feed from other sources to continue their yearly operations rather than sell. This probably results from the users' strong historical ties to the livestock industry as well as the geographic area.
Changing the season of use from winter, spring, and summer to winter may be an added inconvenience to the one operator of the Deleeuw Allotment (168 AUMs currently).	
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Winter)	
Nine allotments, 10,543 acres (5 percent of the planning unit).	
The reduction of livestock grazing by approximately 18 percent for 20 years would mean the 13 livestock operators may need to obtain additional feed for their livestock. Currently 466 AUMs are used by 64 cattle and 397 sheep on these allotments. With implementation of the proposal, approximately 55 cattle and 276 sheep would be authorized to use about 381 AUMs.	Experience has shown that livestock operators in this area are more likely to obtain additional feed from other sources to continue their yearly operations rather than sell. This probably results from the users' strong historical ties to the livestock industry as well as the geographic area.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter)	
One allotment, 272 acres (less than 1 percent of the planning unit).	
Changing the season of use from summer to winter may be an inconvenience to the one livestock operator.	Experience has shown that livestock operators in this area are more likely to change season of use to continue their yearly operations rather than sell. This probably results from the users' strong historical ties to the livestock industry as well as the geographic area.

3. Overall Assessment

The following effects could occur to livestock operators in the planning unit.

a. There may be an increase in grazing for 69 livestock operators.

b. Forty-three livestock operators would be reduced by an average of 44 percent. One of these operators would also be required to change season of use.

c. Twenty-three livestock operators would be reduced up to 100 percent initially, but gradually the allocation would increase, and after year 11, the allocation would return to current levels. Five of these operators would be required to change season of use and two of them would be required to change kind of livestock from sheep to cattle.

d. One operator would be required to change season of use only. (Note: Some livestock operators (totaling 99) are nonadditive since almost half run livestock in two or more allotments within the planning unit.)

The livestock operators that would be reduced or required to change season of use or kind of livestock would likely obtain the additional feed or make the required changes in order to continue their annual operation rather than sell it. This probably results from users' strong historical ties to the livestock industry as well as the geographic area.

4. Conclusions

The proposal would reduce livestock grazing for 56 of the 99 operators of the planning unit. In addition, six of the 56 operators would be required to change season of use. Two of the 56 livestock operators would be required to change kind of livestock from sheep to cattle. Overall the livestock forage allocation would be reduced by about 14 percent, while a 34 percent increase in AUMs presently used would be allowed.

The 56 livestock operators that would be affected by the proposal would likely obtain the needed feed and make the required changes in order to continue their annual livestock operation.

K. WILDERNESS

1. Introduction

This section describes the anticipated impacts that the proposed action would have on wilderness values (i.e., on roadless inventory units presently undergoing wilderness review) within the Parker Mountain Planning Unit.

2. Analysis of Impacts

The following table shows the possible impacts and rationale for predicting the impacts to wilderness values.

ANALYSIS OF IMPACTS ON WILDERNESS

Impacts	Rationale
Three of the six components of the proposal would be affected. These include: Continue Existing Continuous-Seasonal Grazing, Continue Continuous-Seasonal Grazing With Adjustment of Grazing Allocation (Winter), and Continue With Continuous-Seasonal Grazing Adjusted by Utilization (Winter). Within these components, portions of the following 12 allotments would be involved: Bicknell Spring, Hare Lake, Smooth Knoll, Bicknell Winter, Flat Top, Cedar Grove, Cyclone Co-op, Co-op, Loa Winter, Long Hollow, Terza Flat and Grover. The area involved includes approximately 72,185 acres (34 percent of the planning unit).	
No impairment of wilderness suitability from proposed range developments would occur in the eleven roadless inventory units presently undergoing wilderness review.	New range developments (including two reservoirs, eight miles of buried pipeline, six miles of fencing, four water troughs and one exclosure) are proposed on 72,185 acres of roadless units undergoing wilderness review. The developments would be man-made intrusions that would detract from naturalness and could affect the suitability of an area for Congressional wilderness designation (Draft Interim Management Policy and Guidelines for Wilderness Study Areas, 1979). Easily removable or visually unobtrusive range developments such as fences, water troughs, enclosures, and pipelines would probably not impair wilderness suitability. Permanent, visually obvious range developments such as large reservoirs could impair wilderness suitability. No range development determined to impair wilderness suitability could be authorized within a roadless inventory unit undergoing wilderness review (Draft Interim Management Policy and Guildelines for Wilderness Study Areas, 1979).

3. Assessment

Of the proposed range developments, two rerervoirs, 8 miles of pipeline, 6 miles of fencing, four water trough, and one exclosure would be located within 72,185 acres of roadless inventory units presently undergoing wilderness review.

BLM policy and regulations prohibit new range developments that would impair a roadless inventory unit's suitability for Wilderness designation while the unit is undergoing wilderness review. Permanent, obvious developments which would affect an area's naturalness would affect its suitability for designation and would not be authorized unless BLM first determines that the area lacks wilderness character. Any areas that BLM determined to have wilderness character would require congressional action before developments affecting wilderness suitability could be authorized. No developments which would impair wilderness suitability would be authorized within the roadless units until they are released from the wilderness review process.

4. Conclusion

The proposal would not affect wilderness designation suitability within in the planning unit.

L. ECONOMICS

1. Introduction

This section identifies and describes the probable impacts of the proposed action. This analysis includes the impact of this action on changes in rancher income and wealth positions, the local economy, and impacts from hunting big game animals. It does not, however, indicate the wide differences in impacts that may occur to individual operators.

2. Analysis of Impacts

The following tables show the probable impacts and rationale for projecting impacts on income and wealth. Impacts to income are analyzed through two scenarios: 1) changing herd sizes or 2) changing the amount of feed purchased to maintain herd size. The tables also show the probable impacts and rationale for predicting impacts on income from big game hunting from increasing the present 2,035 wildlife AUMs to 3,335.

ANALYSIS OF IMPACTS OF "FEED CHANGE" ON RANCH INCOME

Impacts

The income of both the livestock operators and Wayne County would be affected.

a. Operator impacts: Change in dollars per AU.

	Size of Ranch Operation		
	Small	Medium	Large
Cash Receipts	No change	No change	No change
Cash Expenses	$-3.54	$-7.41	$-3.38
Net Income	+3.54	+7.41	+3.38
Net Return per Ranch	+215.00	+776.00	+892.00
Change in Wealth Position:	+293.00	+968.00	+1,103.00

b. Local economic impacts.

Change in earnings in range livestock sector	$+48,790
Other Impacts: Change in:	
Hay purchases	$-62,725
Government fees	+5,153
Non-fee grazing costs	+18,818
Feeding costs	-5,018

c. Public sector impacts

	State
Sales tax	$+1,997
Income tax	$+2,976

	Local
Sales tax	$320.

Rationale

The effect of the proposal on all ranch sizes would be to reduce cash expenses per AU with no effect on cash receipts. The reduction in cash expenses is due to increased efficiency by the operators (i.e., maximum use of all available AUMs, equipment, etc.).

The "feed change" scenario would affect only the level of earnings, not output levels. The structure of the input-output model is changed to reflect greater efficiency in the "range livestock" sector. Because of greater efficiency in "range livestock" operations, earnings would increase (Appendix III-3).

Currently, livestock are using only 8,285 AUMs of the 12,997 alloted. Implementation of the proposal would encourage full use of the 11,180 alloted livestock AUMs. If not used, all or part of these 2,895 AUMs (11,180 alloted - 8,285 present use = 2,895) could be lost through revocation by the BLM (Appendix III-3).

If these AUMs are used, it would prevent the loss of an estimated $65,000 in wealth to the operators using the planning unit. This, in essence, represents a net increase in rancher wealth due to the proposed reduction of livestock AUMs and the increased actual use of AUMs alloted under the proposal.

ANALYSIS OF IMPACTS OF "HERD CHANGE" ON RANCH INCOME

Impacts

The income of both livestock operators and the local economy of Wayne County would be affected.

a. Livestock operator impacts: Change in dollars per AU.

	Size of Operation		
	Small	Medium	Large
Cash Receipts	no change	$+24.43	$+14.31
Cash Expenses	no change	+6.42	+ 4.43
Net Income	no change	+18.01	+9.88
Net Return Per Ranch	no change	+1,885.00	+2,608.00
Change in wealth Position	$+293.00	+968.00	+1,103.00

b. Local economic impacts

	Direct	Indirect	Total
Output	$+79,795	$+97,376	$+177,171
Earnings	+21,820	+38,771	+60,592

c. Public sector impacts

	State
Sale Tax	$+2,083
Income Tax	+3,696

	Local
Sales Tax	$+397
Property Tax	$+493

Rationale

While the proposal would cut the number of AUMs alloted to livestock, it is also expected to increase livestock use on the planning unit by 2,895 AUMs (11,180 AUMs proposed use - 8,285 present use = 2,895).

On the average, this would allow the medium and large operations to increase their cash receipts, cash expenses, and net income (Appendix III-3).

It was determined that there would be no net change in the number of AUMs used by small operations, therefore, their receipts, expenses, and net income would not change.

The impacts associated with the "herd change" scenario affects both output and earnings in the livestock sector. Final demand for range livestock would increase by $79,795 which would result in a total output change of $177,171 in the other economic sectors (Appendix III-3).

Total county earnings would increase by $60,592. Of that total earnings change, $21,820 would accrue directly to the range livestock sector and the remainder, $38,771 would be received indirectly by other sectors in the region.

Using a sales tax/earnings ratio and an individual state income tax/earnings ratio, public sector impacts were identified (Appendix III-3). State sales tax collectons are estimated to increase by $2,083 and $397 accrues to local government units. In addition, state individual income tax collections are estimated to increase by $3,696. Local property tax on livestock would increase by $493.00

Currently, livestock are using only 8,285 AUMs of the 12,997 alloted. Implementation of the proposal would encourage full use of the 11,180 alloted livestock AUMs. If not used, all or part of these 2,895 AUMs (11,180 alloted - 8,285 present use = 2,895) could be lost through revocation by the BLM (Appendix III-3).

If these AUMs are used, it would prevent the loss of an estimated $65,000 in wealth to the operators using the planning unit. This, in essence, represents a net increase in rancher wealth due to the proposed reduction of livestock AUMs and the increased actual use of AUMs alloted under the proposal.

ANALYSIS OF IMPACTS ON INCOME FROM HUNTING

Impacts

Income from Big Game Hunting

Income from big game hunting would increase from the present estimated gross of $376,800 to about $620,506 during the initial stage and $729,006 during the long-term. This would represent a 60 percent and a 89 percent increase for the two stages respectively.

This would mean an estimated net increase to the state of $72,690.00 intially and $95,160.00 long-term above the projected net big game income without the proposal.

Rationale

These figures are based on the number of hunter days used in the recreation section of this EIS. Hunter-day and multiplier values were obtained from the Parke Mountain Planning Documents and are as follows:

Elk hunter-day -	$54.00
Deer hunter-day -	25.00
Antelope hunter-day -	57.00
Direct and indirect income multiplier -	1.875

3. Overall Assessment

The effect of the "feed change" scenario on all ranchers would be to reduce cash expenses per AU with no effect on cash receipts. The reduction in cash expenses would be greatest for medium size operators (a decrease of $7.41 per AU or 3.8 percent). The effect on net income would be more significant--an increase of $7.41 per AU representing an increase of 17.0 percent.

For both the small and large operators, the effect of the proposal on net income per AU would be relatively modest. In the case of the small operator, the proposal is projected to increase net income per AU from $70.35 to $73.89 an increase of 5.0 percent. For large operators, net income per AU is projected to increase from $56.43 to $59.81, an increase of 6.0 percent.

The effects of the "herd change" scenario on the medium-size operations would be quite significant. Cash receipts per AU are estimated to increase 6.9 percent on $377.68; expenses per AU would increase by 3.3 percent to $199.99; and net income per AU is projected to increase 41.4 percent to $61.52. The impact on net income must be regarded as highly significant. The effects on large operators would be similar although more modest. Per AU revenues and case expenses would increase by 5.6 percent and 2.9 percent, respectively (to $267.13 and $169.88), and net income per AU would increase from $56.43 to $66.31 an increase of 17.5 percent. It is estimated that there would be no net effect on small operators.

The proposal would result in an increased level of use from the initial situation. This would prevent the loss of 2,895 AUMs, and the average small, medium, and large operator could increase use by 13, 43, and 49 AUMs. This increase in use could prevent the loss of rancher wealth of more than $65,000 dollars to Parker Mountain operators. Large and medium sized operators would be the most affected by this alternative while small operators would generally be affected to a minor degree.

It is presently estimated that big game hunting supported by the Parker Mountain Planning Unit accounts for about $376,800.00 of gross income and $165,800.00 of net income.

The proposal is expected to increase game numbers and thereby increase the number of hunters and hunting related income in the area.

During the initial stage of the proposal, net income would be approximately $265,000, or about $72,700 (38%) more than it would be without the proposal. During the long-term, big game hunting-related income would be about $312,700.00 or $95,200.00 (44%) more than without the proposal.

4. Conclusion

The result of the proposed actions under the "feed change" scenario would be in an increase ranch operator and regional income of $48,790. Under the "herd change" scenario, earnings in the livestock sector would increase by $21,820. Secondary impacts would include an earnings increase of $38,771. A major impact of this change in allocation and use would be a total change in the wealth position of ranch operators that is estimated to be approximately $65,000.

Impacts on ranch operators are summarized as follows: under the "herd change" scenario, the net returns per ranch are unchanged for small operators, up $1,885 (41 percent) for medium-size operators, and up $2,608 (18 percent) for large operators. Under the "feed change" scenario, net returns per ranch are up $215 (5 percent), $776 (17 percent), and $892 (6 percent) for small, medium, and large-size operators respectively.

Public sector impacts under the "herd change" situation include an increase of $5,779 in income and sales tax revenue at the state level, and local sales and property taxes are projected to increase by $890. Under the "feed change" scenario, state sales and income tax collections would increase by $4,973 and local sales tax collections would be higher by $320.

The increased wildlife AUMs could mean an additional $72,700 of net income initially and $95,200 in the long-term.

M. SOCIOLOGY

1. Introduction

This section describes the anticipated impacts on the social conditions. Only the attitudes and expectations of local livestock operators and others who have strong historical ties to the livestock industry would be affected.

2. Analysis of Impacts

The following table shows the probable impacts and rationale for projecting the impacts on attitudes and expectations.

ANALYSIS OF IMPACTS ON SOCIAL ATTITUDES AND EXPECTATIONS

Impacts	Rationale
People in all of Wayne County and the Grass Valley part of Sevier and Piute Counties would be affected. Nearly all the population of these areas are involved with or have historic or sentimental ties to the livestock industry.	Past experience has shown that downward adjustments in grazing allocation causes ill feelings against the government among not only livestockmen, but other residents, including the youth.
The proposed reduction of livestock forage allocation from 12,997 AUMs to 11,180 AUMs (14%) would be highly resented. Even though a grazing level 135 percent above the actual use of the past three or four years is proposed, this would have no redeeming values in the livestock operators' opinion.	
The proposal to increase wildlife use from 2,039 AUMs to 2,839 AUMs (139%) would indicate to the local residents that livestock are being replaced.	
The implementation of the allotment management plans and change in forage allocation would be perceived as additional government intervention; it would be felt that outside influences are dictating local programs. Litigation against BLM is very likely.	

3. Overall Assessment

The proposal to decrease grazing allocation by 14 percent in the short term and 11 percent in the long term would be resented by not only the livestock operators themselves, but most other residents of Wayne and the other affected parts of Sevier and Piute counties. Even though grazing would be allowed 135 percent above the use that has been made for the past three to four years, the entire program would be seen as greater government intervention.

4. Conclusion

Locally, the proposed change in BLM livestock grazing would be seen as yet another instance of decisionmaking by distant authorities who fail to understand the effects on local residents. Impacts would likely include intensification of negative attitudes toward "big government", along with some efforts to gain agricultural aid to ranchers. This may take the form of lobbying activities through the Cattlemen's Association, or direct contact with elected representation. Litigation against the government is likely.

Overall, the social impacts would be unquantifiable. To some extent, the proposal would initially contribute to an already existing alienation and frustration with government, although the achievement of a projected increase in AUMs may restore some credibility in BLM actions. The perception of constrained local control over the community's future would persist and resentment may intensify among longtime residents.

CHAPTER 4

MITIGATING MEASURES NOT INCLUDED IN THE PROPOSED ACTION

CHAPTER 4
MITIGATING MEASURES

All proposed mitigation is described in Chapter 1 as standard design, construction, and operation features.

CHAPTER 5

ANY ADVERSE IMPACTS WHICH CANNOT BE AVOIDED SHOULD THE PROPOSAL BE IMPLEMENTED

CHAPTER 5

Adverse Impacts That Cannot Be Avoided Should the Proposal Be Implemented

INTRODUCTION

Implementation of the proposed action would result in adverse impacts. This chapter summarizes the adverse impacts addressed in Chapter 3 because no mitigating measures were proposed in Chapter 4. Subjects not mentioned in this chapter do not have unavoidable adverse impacts.

SOILS

Construction of 16.3 miles of fence, four new reservoirs, 16 miles of pipeline, nine troughs, modifing 30 reservoirs, and chaining 4,800 acres would disturb soil and reduce vegetation ground cover on about 4,872 acres which would increase soil erosion. Sediment yield would be increased for a period of 1 to 3 years. The amount of increase is not known but is believed to be slight.

WATER RESOURCES

The construction and vegetation treatment proposed would reduce vegetation ground cover on about 4,872 acres. This would cause an increase in overland water flow for 1 to 3 years. The increased overland water flow would lower the water quality by adding sediment and other soil surface materials to the water system. The amount of increase is not known but is believed to be very slight.

VEGETATION AND FORAGE

One vegetation type would be changed from a pinyon-juniper to a sagebrush grass type on 2,400 acres. The change would last for 6 to 20 years. Key species, forage production, and forage condition would decline in 20 years on 52 percent of the planning unit.

ANIMAL LIFE

Over use could occur on seven allotments (Busenbark, Donkey Hill, Government Creek, Horse Pasture, River, Teasdale Bench, and Teasdale Ranch) which would result in reduction of deer numberss.

Sage grouse may be adversely affected as livestock grazing in spring increases.

Increased livestock grazing in spring could reduce desirable forage plants for prairie dogs and affect survival of their young.

The quantity and quality of fish in about 10 miles of stream would deteriate.

ARCHAEOLOGICAL

Regardless of the standard design, construction, and operation features, inadvertant damage could occur to archaeological resources. In isolated cases, scientific information could be partially on totally lost. The amount and significance of loss cannot be accurately predicted.

VISUAL RESOURCES

Should the exclosure proposed for the Donkey Hill Allotment be located within VRM Class II areas, there would be an adverse impact on the visual resources.

RECREATION

Recreation opportunities, in the form of sage grouse hunting days, would be adversely impacted because of the management proposal which could reduce sage grouse habitat. An unquantified decrease in fisherman success and resultant fisherman days is predicted.

LIVESTOCK GRAZING

Should the proposal be implemented, grazing use by 56 livestock operators would be reduced, six operations would be required to change season of use, and two operations would be required to change kind of livestock from sheep to cattle.

SOCIOLOGY

Locally, the proposed change in BLM livestock grazing would be seen as yet another instance of decisionmaking by distant authorities who fail to understand the effects on local residents. Impacts would likely include intensification of negative attitudes toward "big goverment," along with some efforts to gain agricultural aid to ranchers. This may take the form of lobbying activities through the Cattlemen's Association, or direct contact with elected representation. Litigation against the government is likely.

Overall, the social impacts would be unquantifiable. To some extent, the proposal would initially contribute to an already existing alienation and frustration with government, although the achievement of a projected increase in AUMs may restore some credibility in BLM actions. The perception of constrained local control over the community's future would persist and resntment may intensify among long-time residents.

CHAPTER 6

THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

CHAPTER 6

RELATIONSHIP BETWEEN LOCAL SHORT-TERM USE OF MAN'S ENVIRONMENT AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The allocation of vegetation forage to big game animals, increases or decreases in livestock forage allocation, and range developments would derive short-term values from the environment, and affect its long-term productivity. In this statement, short-term is considered as 20 years or less after implementation, and long-term is beyond 20 years. The long-term point in time when effects are measured is set at approximately 30 years from the decision point.

Present vegetation forage conditions are expected to deteriorate on 60 percent of the planning unit (126,789 acres) as a result of overutilization of key forage plants during the critical spring growing period. The short-term use of grazing is expected to increase from actual use of 64 percent of allocation to 100 percent of allocation and would tend to reduce all measured vegetation sub-category parameters over the long-term.

Range developments would cause a short-term reduction in vegetation on about 4,872 acres. Over the long-term vegetation forage production would be enhanced because of these developments, mainly because of the improved livestock and wildlife distribution.

The change in grazing management on 40 percent of the area, including the proposed range developments (sagebrush and pinyon-juniper control, fencing, and water developments), would slightly increase the amount of livestock forage (AUMs) being produced on that area during the short-term. By continuing this management on the area, the increased amounts of forage could carry over into the long-term period of productivity.

The continuation of present management practices on 60 percent of the area would supply the short-term vegetation forage needs but, nevertheless, present conditions in this portion of the planning unit are expected to deteriorate over the long-term.

The elements of the proposal that propose heavier livestock grazing in the spring season could increase competition for the desirable vegetation forage species between wildlife and domestic livestock enough to reduce wildlife numbers in the long-term. Sage grouse, deer, and prairie dogs could be adversely affected in the long-term by this competition on several areas of the planning unit.

The increased allocation of vegetation forage for wildlife and more intensive livestock grazing management would generally improve wildlife habitat for most species. Total populations of deer, antelope, and elk are expected to increase within a few years of implementation and if maintained at this higher level would show increases for the long-term.

Fish habitat is expected to decline on 10 miles of stream as a result of continued livestock grazing.

The present soil erosion conditions on most of the planning unit would not change very much. Proposed range developments, such as fences, pipelines, reservoirs, and chaining, would cause a very slight increase in soil movement for a short period (1 to 3 years), but the effect is minor since it would cover only approximately 2 percent of the planning unit. This accelerated erosion would cause an increase in sediment yield for a short period of 1 to 3 years. (Sediment yield would be reduced in the long-term.) The long-term reduction would be much more significant than the short-term increase.

Likewise, overall water quality would be improved in the long-term even though there would be a slight increase in sediment yield and resultant lowering of surface water quality for a short period of 1 to 3 years in the few streams involved.

The possible inadvertant destruction of archaeological remains during construction of range developments or vegetation treatments could result in a long-term loss of scientific information, because present salvage techniques do not insure total information recovery. The potential extent of this is unknown.

All visual modification resulting from the proposed range developments would be long-term in nature. However, in most cases, the visual modification would be compatible with the management objectives for the Visual Resource Management class (VRM) areas in which it would occur. There would be no change in scenic quality. The only exception would occur if the proposed exclosure in the Donkey Hill allotment is located in a VRM class II area. Visual modification from the exclosure would not be compatible with VRM class II management objectives.

With the present hunter success ratio, the planning unit would provide an additional 9,016 deer hunter days and 339 elk hunter days over the short-term, and an additional 13,355 deer hunter days and 339 elk hunter days over the long-term. The proposal would result in an unquantified decrease in the quality and numbers of sage grouse hunter days and trout fisherman days provided by the planning unit over the short and long-term.

Local income from livestock production and recreation is expected to increase over the long-term. The magnitude is difficult to predict, but is estimated the total earning for the local economy to be in the range of $49,000 to $61,000 for the planning unit, depending on whether the livestock operators choose to modify herd size or change livestock feeding patterns.

Increases from big game hunting in the planning unit could increase income as much as $72,690 within the state. The amount accruing to Wayne County is unknown.

On balance, these various changes to the resources of the unit, except for vegetation and economic impact, amount to only small marginal effects in the environmental productivity or quality of the area. The economic effects achieved by the unit plan are achieved at the cost of continuing the decline in forage productivity of the vegetation resource and the plant composition and stability of the resource.

CHAPTER 7

ANY IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES WHICH WOULD BE INVOLVED IN THE PROPOSED ACTION SHOULD IT BE IMPLEMENTED

CHAPTER 7
ANY IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES WHICH WOULD BE INVOLVED IN THE PROPOSED ACTION SHOULD IT BE IMPLEMENTED

Irreversible commitment is defined as incapable of being reversed; once initiated, action would continue. Actions committing future generations to continue a similar course may be considered irreversible. Irretrievable is defined as irrecoverable; not retrievable; once used, not replaceable.

Table 7-1 is a list of irreversible and irretrievable commitments for the proposed action.

TABLE 7-1

Irreversible and Irretrievable Commitment of Resources

		Commitment	
Item of Use	Reason for Commitment	Irreversible	Irretrievable
Soil	Erosion resulting in loss of soil during construction of range developments.	no	yes
Water	Loss of water quality due to increased overland water flow, 1 to 3 years.	no	yes
Vegetation	Long-term annual consumption of 14,901 AUMs of vegetation forage.	no	yes
	Short-term disturbance of 4,872 acres of vegetation.	no	yes
	Inadvertent loss of proposed or candidate threatened or endangered species.	no	yes
Animal Life	Reduction of deer numbers as a result of overgrazing.	no	yes
	Sage grouse decline.	no	yes
	Prairie dog decline.	no	yes
	Deterioration of fish quantity and quality.	no	yes

TABLE 7-1 (concluded)

Item of Use	Reason for Commitment	Commitment Irreversible	 Irretrievable
Archaeological Resources	Inadvertent damage of sites by construction.	yes	yes
Visual Resources	Visual modification from range developments.	no	yes
Economics	Human resources, fuel, and materials used to implement the proposal. Once made, the expenditures of these resources would preclude their use for other projects.	no	yes
Sociology	Loss of favorable attitudes and expections.	no	yes

CHAPTER 8

ALTERNATIVES TO THE PROPOSED ACTION

CHAPTER 8
ALTERNATIVES TO THE PROPOSED ACTION

A. INTRODUCTION

Five alternatives to the proposed action are addressed in this chapter. They are: 1) continuation of present grazing management and level of vegetation allocation (no action) 2) maximum constraints on livestock grazing, 3) continue existing management with a 50 percent reduction from the proposed livestock allocation, 4) elimination of livestock grazing, and 5) adjustment of use.

A description of each alternative is followed by an analysis of predicted impacts. The impact analysis is structured in the same manner as Chapter 3. Like Chapter 3, Chapter 8 uses the existing environment (Chapter 2) as a base for impact analysis. The five alternatives follow as sections B through F. Section G is a summary table which compares the impacts of the alternatives and the proposed action.

B. CONTINUATION OF PRESENT GRAZING MANAGEMENT AND LEVEL OF VEGETATION ALLOCATION (No Action)

1. Description of the Alternative

a. Purpose

This alternative would allow continuation of the present grazing management and levels of allocation within the planning unit. The allocations in this alternative represent the present livestock allocation and allocation of forage for current wildlife use. Any vegetation production above the present livestock allocation and wildlife use would be allocated to other uses. Overall 74 percent of the vegetation production on public lands would be allocated to livestock, 12 percent to wildlife, and 14 percent for other uses. Present vegetation production would be over-allocated by about 10 percent (Table 8-1).

b. Components of the Alternative Action

This alternative is divided into two components. A summary of the components is given on Table 8-1 and the allotment listing for each is given in Appendix VIII-1. The components are: (1) no livestock grazing and (2) continue existing continuous-seasonal grazing (spring, fall, winter). The existing and alternative levels of vegetation use are:

TABLE 8-1

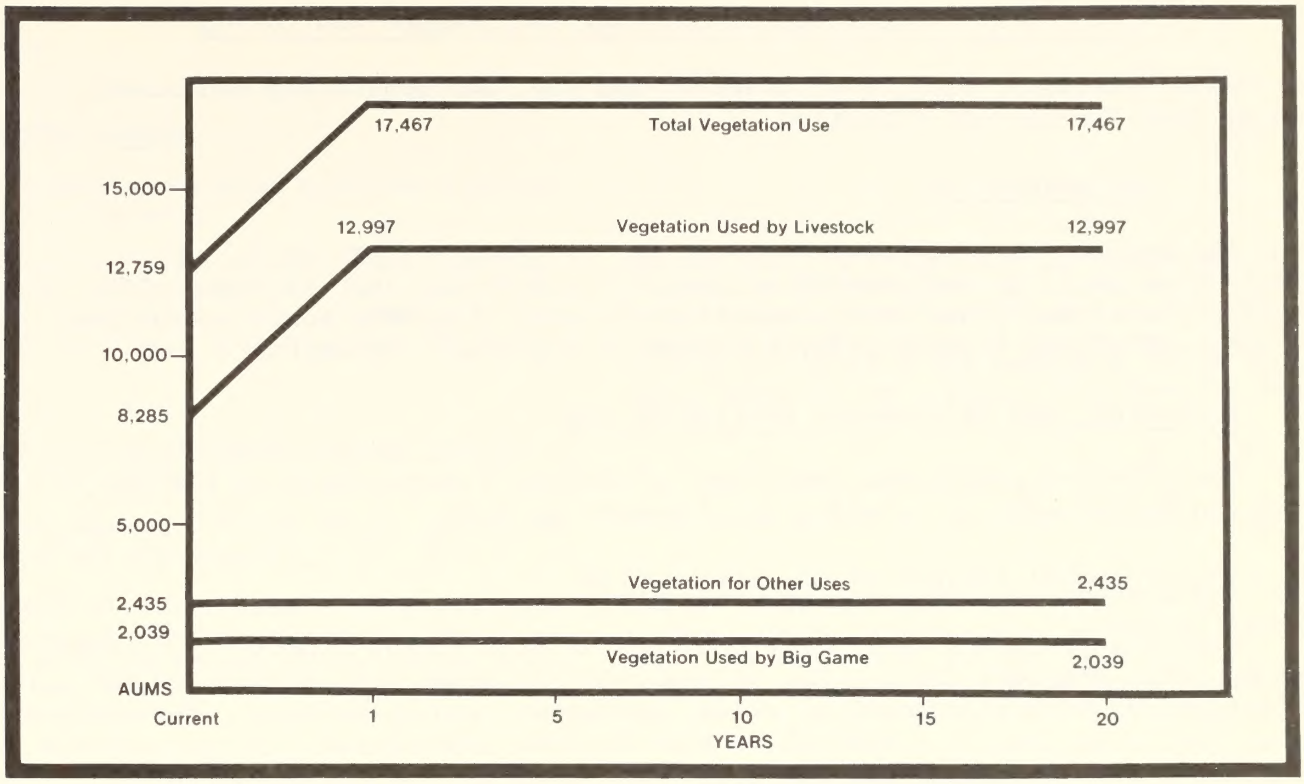
Summary of Existing Vegetation Use and Alternate Allocation[a]
With Continuation of Present Management and Level of Use

Alternative Action Components	Existing Livestock and Wildlife Grazing Situation						Alternative Allocation (AUMs) Initial and Long-Term			
	Vegetation Production AUMs	Present Livestock Use				Est. Current Wildlife Use (AUMs)				
		Kinds	Number	AUMs Allocated	AUMs Actual[b]		Livestock	Wildlife	Other Uses	Overallocated
Continue No Livestock Grazing (3 Allotments)	30	None	0	0	0	18	0	18	12	0
Continue Existing Continuous-Seasonal Grazing (Spring, Fall, Winter) (40 Allotments)	15,909	Sheep Cattle	17,882 4,180	12,997	8,285	2,021	12,997	2,021	2,423	1,532
TOTAL	15,939	Sheep Cattle	17,882 4,180	12,997	8,285	2,039	12,997	2,039	2,435	1,532

Source: Parker Mountain Planning Documents, 1978a.

[a] Appendix VIII-1 contains the details of the existing forage use and proposed forage allocation; it also contains additional explanatory footnotes.

[b] Based on the average authorized active (licensed) use for the 3 year period 1975-1977.



EXISTING AND ALTERNATIVE (CONTINUATION OF PRESENT MANAGEMENT AND LEVEL OF USE) VEGETATION USE.

(1) No Livestock Grazing

Three allotments comprising 875 acres or less than 1 percent of the public land in the planning unit are included in this component. No AUMs would be allocated to livestock. Eighteen AUMs would be allocated to wildlife, and 12 AUMs would be allocated to other uses.

(2) Continue Existing Continuous-Seasonal Grazing (Spring, Fall, Winter)

The present continuous-seasonal grazing would continue on 40 allotments (212,182 acres). The vegetation allocation would be 12,997 AUMs for livestock and 2,039 AUMs for wildlife. Twenty-one allotments would be overallocated for a total of 1,532 AUMs. Twelve allotments would have vegetation production in excess of the livestock allocation and current big game use and the excess production (2,435 AUMs) would be allocated for other uses.

2. Support Requirements

a. Labor (Work-Months) and Development Costs

The annual operational and maintenance costs for existing developments would be about $40,000 for BLM and $4,500 for livestock operators.

b. Administration, Control of Unauthorized Use and Monitoring

Administration, control of unauthorized use, and monitoring would not change from the current situation.

c. Implementation

Implementation procedures would be as described in Chapter 1. This alternative would be implemented by decision within one year following the publication of the final environmental statement. The AMPs would be revised or prepared within 5 years after issuance of the final statement.

3. Operation, and Maintenance Considerations

The standard procedures described in Chapter 1 would apply to the operation and maintenance of existing developments by BLM.

4. Environmental Impacts of the Alternative

Analysis indicates that there would be no significant impacts on climate, air quality, geology, topography, paleontological resources, archaeological resources, historical resources, visual resources, and wilderness. Therefore, these resources are not discussed further in this alternative. Other resource components are introduced and analysis procedures and assumptions given or each resource component.

The impact analysis assesses the impacts that would result from continuation of the present grazing management and level of vegetation allocation on the planning unit.

a. Impact on Soils

(1) Introduction

This section analyzes the impacts to soils under the continuation of present grazing management and level of vegetation allocation (no action) alternative. Sediment yield and soil erosion conditions would be slightly altered on some allotments due to the change in vegetation ground cover.

(2) Analysis of Impacts

The following table shows the impacts on the sediment yield and erosion condition and the rationale for projecting these impacts.

ANALYSIS OF IMPACTS ON SEDIMENT YIELD

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotments, 875 acres (less than 1 percent of the planning unit).	
The present estimated sediment yield from these allotments is 2 acre-feet per year. The sediment yield from these allotments is not expected to change over the next 20 years.	Sediment yield is a function of surface geology, soils, climate, runoff characteristics, topography, land use,, upland erosion, channel erosion, and ground cover. The vegetation ground cover on the Dez Hickman, Tanner, and Wildlife allotments is not expected to change significantly therefore the sediment yield would not change.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Forty allotments, 212,182 acres (about 99 percent of the planning unit).	
The present estimated sediment yield from these allotments is 233.4 acre-feet per year. On 212,182 acres (99 percent of the planning unit) the sediment yield would increase. The amount of increase is unknown.	Sediment yield is a function of surface geology, soils, climate, runoff characteristics, topography, land use, upland erosion, channel erosion, and ground cover. The vegetation ground cover on 212,182 acres (99 percent of the planning unit) would decline and therefore sediment yield would increase.

ANALYSIS OF IMPACTS ON SOIL EROSION CONDITION

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotment, 875 acres (less than 1 percent of the planning unit).	
The current soil erosion conditions on the allotments are: 77 percent of the area is classified as slight and 23 percent of the area is classified moderate. Erosion condition would remain the same for the next 20 years.	Erosion condition is related to the amount of vegetative ground cover (Bentley and Eggleston, 1977). The vegetation ground cover on the Dez Hickman and Wildlife allotments is not expected to change significantly, therefore the erosion condition would not change either.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Forty allotments, 212,182 acres (about 99 percent of the planning unit).	
The current soil erosion conditions on the allotments are: 31 percent of the area is classified stable, 53 percent of the area is classified slight, 12 percent of the area is classified as moderate, 2 percent of the area is classified as critcal and 2 percent of the area is unclassified.	Erosion condition is related to the amount of vegetation ground cover (Bentley and Eggleston, 1977). The vegetation ground cover on 117,839 acres (56 percent of the planning unit) would decrease from 17 percent to 14 percent and the erosion condition would decline. On 94,343 acres (44 percent of the planning unit) the vegetation ground cover would increase from 16 percent to 18 percent and the erosion condition would improve.
On 17,839 acres (56 percent of the planning unit) the erosion condition would decline slightly while on 94,343 (44 percent of the planning unit) the erosion condition would improve.	

(3) Assessment

The present sediment yield is estimated to be 235.4 acre-feet per year. On the "No Livestock" grazing allotments only the sediment yield on the Tanner Allotment would be affected and it would be reduced.

On the "Continue Existing Continuous-Seasonal Grazing (Fall, Winter, Spring)" allotments the sediment yield would increase on 117,839 acres (56 percent of the planning unit) due to a decrease in the vegetation ground cover from 17 percent to 14 percent; the sediment yield would decrease on 94,343 acres (44 percent of the planning unit) due to the increase in the vegetation ground cover from 16 percent to 18 percent.

Soil erosion also affected by vegetation ground cover, would be unchanged in the "No Livestock" grazing allotments. On the "Continue Existing Continuous-Seasonal" allotments the erosion condition would decline on 117,839 acres (56 percent of the planning unit) due to a decrease in the vegetation ground cover from 17 percent to 14 percent. The erosion condition would inprove on 94,343 acres (44 percent of the planning unit) due to an increase in the vegetation ground cover from 16 percent to 18 percent.

(4) Conclusion

Sediment yield would be increased on 99 percent of the planning unit. There would be a slight decline in overall soil erosion condition. The magnitude is unknown, but would differ greatly from the existing.

b. Impacts on Water Resources

(1) Introduction

This section analyzes the impacts on water quality under the Continuation of Present Grazing Management and Level of Vegetation Allocation (No Action) alternative. Water quantity and quality would be affected by changes in vegetation ground cover.

(2) Analysis of Impacts

The following table shows the projected impacts to water quantity and quality and the rationale for projecting the impacts.

ANALYSIS OF IMPACTS ON WATER QUANTITY

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotments, 875 acres, (less than 1 percent of the planning unit).	
There is no estimated water yield from these allotments.	There is no estimated water yield from these allotments.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Forty allotments, 212,182 acres (about 99 percent of the planning unit).	
The present water yield from these allotments is 10,904 acre-feet per year. On 117,839 acres (56 percent of the planning unit) runoff would increase and infiltration would decrease. On 94,343 acres (44 percent of the planning unit) runoff would decrease and infiltration would increase. No change in total water yield would occur except for the 2,224,200 gallon reduction in water consumed by livestock which would increase the total water yield.	Animal grazing affects water yield by altering vegetation ground cover and soil compaction. Estimates show that the vegetation ground cover on 117,839 acres (56 percent of the planning unit) would decrease from 17 percent to 14 percent which would increase runoff and decrease infiltration. The vegetation ground cover on 94,343 acres (44 percent of the planning unit) would increase from 16 percent to 18 percent which would decrease runoff and increase infiltration. Livestock consume 300 gallons of water per AUM (Stoddard and Smith, 1955). Under this component, the amount of AUMs provided for livestock would be reduced from 12,997 to 5,583.

ANALYSIS OF IMPACTS ON WATER QUALITY

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotments, 875 acres (less than 1 percent of the planning unit).	
There is no estimated water yield from these allotments.	There is no estimated water yield from these allotments.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Forty allotments, 212,182 acres (about 99 percent of the planning unit).	
The present water quality would decrease on 212,182 acres (99 percent of the planning unit). The amount of change is unknown.	The vegetation ground cover on 212,182 acres (99 percent of the planning unit) would decrease.

(3) Assessment

There is no estimated water yield on the "No Livestock Grazing" allotments nor is any projected under this alternative.

The water yield from the "Continue Existing Continuous-Seasonal Grazing" (Spring, Fall, Winter) allotments is 10,904 acre-feet per year. This yield is not expected to change, though the amounts of runoff and infiltration would vary on the allotments as vegetation ground cover varies.

The existing water quality would be altered as the amounts of runoff and infiltration are altered. Surface runoff contains more sediment, coliform, and other pollutants than ground water. In some areas, a reduction in surface runoff would improve overall water quality. In some areas, an increase in surface runoff would lower overall water quality.

(4) Conclusion

Present water quantity would be degraded by this alternative. The water quality change is unknown.

c. Impacts on Vegetation

(1) Introduction

This section describes the anticipated impacts which this alternative action would have upon vegetation on public lands in the planning unit. Impacts to vegetation are interrelated with impacts to animal life, livestock grazing, watershed, and visual resources.

Vegetation is divided into the following sub-categories for analysis in this section--types, sub-types, and riparian conditions; vegetation ground cover; key species and vegetation composition; threatened and endangered species; forage production; forage condition; and forage condition trend.

Impacts upon each sub-category of the vegetation resource are analyzed separately, followed by an assessment of the impacts and a conclusion.

(2) Analysis of Impacts

The following tables show the probable impacts on the seven sub-categories of vegetation and the rationale for predicting these impacts.

ANALYSIS OF IMPACTS ON TYPES AND SUB-TYPES
(Including Riparian Vegetation and Condition)

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotments, 875 acres of public land (less than 1 percent of the planning unit).	
The present vegetation types are: Sagebrush type 90 acres Grass type 350 acres Pinyon-juniper type 323 acres Annual type 112 acres	With the continuation of present management practices, grazing use is expected to be about the same. There would be some increases in the grass species because of the preference of wildlife for browse species but the overall types would remain the same. The annual type in the Wildlife Allotment may change slowly to grass type but because grazing use has been up to 100 percent of the allowable use, this change would be very slow.
These types are not expected to change as a result of the alternative action. There could be a slight decrease in the annual type and an increase in the grass, but this change would be slow and may not be noticeable within 20 years.	
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Forty allotments, 212,182 acres (about 99 percent of the planning unit).	
The present vegetation types are: Sagebrush type 136,681 acres Grass type 25,728 acres Pinyon-juniper type 47,388 acres Broad-leaf trees 943 acres Annual types 1,562 acres Riparian 67 acres and 688 acres waste	The continuation of present grazing practices where harvesting is under or near the vegetation production would tend to keep vegetation in about the same condition. However, on those allotments where harvesting is in excess of production, the preferred plant species would probably be reduced in number and be replaced with annuals and other less desirable species.
There would be no change in types or sub-types as a result of implementation of this alternative. However, there could be an increase in the annual vegetation type on 25 allotments where harvesting is allowed in excess of forage production.	
The riparian vegetation condition presently is 9 acres poor, 11 acres fair, and 47 acres good. These conditions are not expected to change.	The riparian vegetation would receive about the same use as in the past and therefore is expected to remain in its present condition.

ANALYSIS OF IMPACTS ON VEGETATION GROUND COVER

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotments, 875 acres public land (less than 1 percent of the planning unit).	
The average vegetation ground cover is presently about 24 percent for these allotments and is not expected to increase within the next 20 years.	Implementation of this alternative would have no effect on the vegetation ground cover in this component. These allotments have had no authorized livestock use for the last 15 years. Because there has been no livestock grazing for this period of time, the vegetation on these allotments is considered to have reached a state of relative stability near natural potential. Therefore, vegetation ground cover would not change due to this alternative action.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percnet of the planning unit).	
By implementing the alternative, the present vegetation ground cover would decline within 20 years. The amount of decine is unknown.	The alternative would allow livestock grazing during periods critical to growth and reproduction at a higher level than is currently being used by livestock. Livestock use averaged 67 percent of allocation for 1975-1977 or what would be authorized by the alternative. Utilization of key and desirable species could increase at critical periods by implementing the alternative. This would result in a decline of these species (Cook, 1971).
Twenty-five allotments, 85,868 acres (40 percent of the planning unit).	
Vegetation ground cover is expected to decline within 20 years. The amount of decline is unknown.	It is believed that these allotments are grazed in excess of grazing capacity by livestock and wildlife. Utilization for all allotments is considered to be heavy, 70 to 90 percent of current annual growth of key and other desirable species. Studies conducted in western Utah by Cook (1971) indicate that 60 percent utilization is perhaps too severe for even winter use, but 50 percent utilization would maintain optimum vigor and sustained yield. Also 25 percent utilization was considered more reasonable than 30 percent for late spring and summer use.

ANALYSIS OF IMPACTS ON KEY SPECIES AND VEGETATION COMPOSITION

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotments, 875 acres (less than 1 percent of the planning unit).	
By implementing the alternative, no change in key species and vegetation composition is predicted within 20 years. Present key species composition is 15 percent for Dez Hickman allotment, 23 percent for Wildlife Allotment, and 1 percent for Tanner Allotment.	The present grazing management that has been applied for the past several years and has brought about the present vegetation composition would continue.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit).	
There are currently three shrubs and five perennial grasses listed as key species for the 15 allotments. (See Table 2-14 for listing of species composition by allotment.) Composition of key and desirable plant species may decline below present levels. The degree of decline is unknown, but key species that are presently only a trace of total vegetation composition could be eliminated from portions of this area within 20 years.	The alternative would allow livestock grazing at a level higher than is currently being used during periods critical to plant growth and reproduction. (Livestock use averaged 67 percent of allocation, or what would be authorized by the alternative, for 1975-77.) Utilization of key species (which is currently 60 percent) could increase during critical periods by implementing the alternative. This could result in a decline of these species. Cook (1971) indicates that utilization exceeding 25 percent during late spring may be too severe for optimum vigor and sustained yield of most range forage species.
Twenty-five allotments, 85,868 acres (40 percent of the public land in the planning unit).	It is believed that these allotments are grazed in excess of grazing capacity by livestock and wildlife.
It is expected that key species would remain at current low composition levels or decrease over a 20 year period.	Key species are currently at low levels in the total vegetation composition. Not including Miner's Mountain seeding (1,200 acres), average key species composition is 3 percent. Utilization for all allotments is considered to be heavy, 70 to 90 percent of current annual growth of key species. Studies conducted in the Great Basin by Cook (1971) indicate that 60 percent utilization is perhaps too severe for even winter use, but 50 percent utilization would maintain optimum vigor and sustained yield. Also, 25 percent utilization was considered more reasonable than 30 percent for late spring and summer use.

ANALYSIS OF IMPACT ON THREATENED AND ENDANGERED PLANT SPECIES

Impacts	Rationale
Forty-three allotments, 213,057 acres (entire planning unit).	
The impacts this alternative would have upon the candidate and proposed threatened and endangered plant species in this planning unit are unknown, but it is expected that there would be very little if any impact from continuation of present management.	According to BYU herbarium records (Welsh, 1976), two proposed endangered plant species (Federal Register, June 16, 1976) and two candidate threatened plant species (Welsh, 1978); have been collected within the Parker Mountain Planning Unit (see Table 2-16). Since critical habitat for these plant species has not been determined, and the extent of their individual populations is unknown, the entire planning unit is included in this impact sub-category. Any type of vegetation management, including type of grazing, could have some inadvertent effect upon threatened or endangered plant species. Because these species are not well known, the way they respond to various types of grazing management has not been determined.

ANALYSIS OF IMPACT ON FORAGE PRODUCTION

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotments, 875 acres (less than 1 percent of the planning unit).	
By implementing the proposal, no change in forage production (currently 30 AUMs) is predicted within 20 years.	The present grazing management that has been applied for the past several years and has brought about the present level of forage production would continue.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit).	
Within a 20-year period, forage production would decrease. The amount of decrease cannot be accurately predicted.	The alternative would allow livestock grazing during periods critical to growth and reproduction at a higher than current actual use level. (Livestock actual use averaged 67 percent of allocation between 1975-1977.) This would mean that utilization of important forage species could increase during critical periods by implementing the alternative. This would cause a decline of these species (Cook, 1971).
Twenty-five allotments - 85,868 acres (40 percent of the planning unit).	
Forage production on these allotments is currently 3,560 AUMs. It is expected that forage production would decrease over the next 20 years. The amount of decrease cannot be accurately determined at this time but would be linked to any decrease in composition of key and other desirable forage species.	It is believed that these allotments are grazed in excess of grazing capacity by livestock and wildlife. Key species are currently at low levels in the total vegetation composition. Not including Miner's Mountain seeding (1,200 acres), average key species composition is 3 percent. Utilization for all allotments is considered to be heavy, 70 to 90 percent of current annual growth of key species. Studies conducted in the Great Basin by Cook (1971) indicate that 60 percent utilization is perhaps too severe for even winter use, but 50 percent utilization would maintain optimum vigor and sustained yield. Also, 25 percent utilization was considered more reasonable than 30 percent for late spring and summer use.

ANALYSIS OF IMPACTS ON FORAGE CONDITION

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotments, 875 acres (less than 1 percent of the planning unit).	
No change is expected in forage condition within 20 years for these allotments. Current forage condition is fair, 400 acres; good, 475 acres.	Continuation of existing grazing management would be expected to maintain forage condition on the three allotments, because the same practices that have been in effect for many years and have led to the present good and fair forage condition would continue.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit).	
By implementing the alternative, the present forage condition of good on 99,489 acres, fair on 21,782 acres, and poor on 5,043 acres would decline within 20 years.	The alternative would allow livestock grazing during periods critical to growth and reproduction at a higher level than is currently being used by livestock. Livestock use averaged 67 percent of allocation for 1975-1977 or what would be authorized by the alternative. Utilization of key and desirable species could increase at critical periods by implementing the alternative. This could result in a decline of these species and subsequently forage condition (Cook, 1971).
Twenty-five allotments, 85,868 acres (40 percent of the planning unit).	
Present forage conditions would decline. The degree of decline is unknown. Present forage condition is: Good 12,124 acres Fair 49,946 acres Poor 23,798 acres	It is believed that these allotments are grazed in excess of grazing capacity by livestock and wildlife. Key species are currently at low levels in the total vegetation composition. Not including Miner's Mountain seeding (1,200 acres), average key species composition is 3 percent. Utilization for all allotments is considered to be heavy, 70 to 90 percent of current annual growth of key species. Studies conducted in the Great Basin by Cook (1971) indicate that 60 percent utilization is perhaps too severe for even winter use, but 50 percent utilization would maintain optimum vigor and sustained yield. Also, 25 percent utilization was considered more reasonable than 30 percent for late spring and summer use.

ANALYSIS OF IMPACTS ON FORAGE CONDITION TREND

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotments, 875 acres (less than 1 percent of the planning unit).	
Trend in forage condition on these allotments is down. Under conditions of normal precipitation and no livestock grazing, forage condition trend would continue to improve and would reach a state of relative stability within a 20-year period.	The current downward trend in forage condition on these three allotments is probably due to lack of precipitation. Precipitation has been less than average for the past 6 years. (NOAA, 1973 to 1978). It is expected that forage condition trend would improve after a few years of normal precipitation.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Forty allotments, 212,182 acres (99 percent of the planning unit).	
The current downward trend in forage condition is expected to improve initially with normal precipitation. However, a downward forage condition trend may be sustained over a period of 20 years if actual livestock use increases to 100 percent of allocation and is maintained through periods of drought.	The current downward trend in forage condition on these allotments is probably due to lack of precipitation. It is expected that forage condition trend would improve initially, after a few years of normal precipitation for all the allotments. For the 15 allotments the alternative would allow livestock grazing during periods critical to growth and reproduction at a higher level than is currently being used by livestock. Livestock use from 1975 through 1977 averaged 67 percent of the allocation that would be authorized by this alternative. Utilization of key species could increase at critical periods by implementing the alternative. This could result in a decline of these species, and subsequently, forage condition trend (Cook, 1971). Utilization on the allotments is considered to be heavy, 70 to 90 percent of current annual growth of key species. Studies conducted in the Great Basin by Cook (1971) indicate that 60 percent utilization is perhaps too severe for even winter use, but 50 percent utilization would maintain optimum vigor and sustained yield. Also, 25 percent utilization was considered more reasonable than 30 percent for late spring and summer use.

(3) Overall Assessment

There would be no discernable change in vegetation types or sub-types. Riparian vegetation conditions would not change. Vegetation ground cover would decrease on 40 allotments, 212,182 acres, (99 percent of the planning unit) because of overallocation of available forage or overgrazing during the critical growing period (Cook, 1971).

On over 99 percent of the planning unit (212,182 acres) key and other desirable plant species would decline in abundance. Where these plants represent only a trace of composition any decline could mean their disappearance from that portion of the range. It is expected that key species would maintain present percent composition on three allotments, 875 acres (less than 1 percent of the planning unit).

Except for the three "No Livestock Grazing Allotments" (the same 875 acres discussed above), there would be no increase in forage production. Forage production is linked to the abundance of desirable and key range forage plants, and if conditions are such that these productive plants cannot compete with weedy species because of overutilization by livestock or big game, they would barely maintain, or fall below present composition levels. Forage production on 99 percent of the planning unit would likely decrease below the present 15,909 AUMs.

Forage condition is presently good on 112,088 acres, (52 percent of the planning unit), while 72,128 acres are in fair condition, and 28,841 acres are in poor condition. With implementation of this alternative, forage condition would deteriorate. Current forage condition is in part, a result of current management, but this analysis assumes that actual use would increase to 100 percent of allocation and be maintained. Average actual use for the entire planning unit has been 64 percent of allocation.

Forage condition trend is down on all 213,057 acres of the planning unit. The downward trend over the entire planning unit is probably due to lack of precipitation. For the past 6 years precipitation has been less-than-average (NOAA, 1973-1978). Overall, implementation of this alternative would contribute to declining forage condition trend. It is not possible to accurately quantify possible decreases in key species composition, forage production, etc. if current grazing practices were to continue for another 20 years, but it has been determined that much of this planning unit is producing far less than its potential, due probably to past and present grazing practices.

(4) Conclusions

Based on the above analysis and assessment, implementation of this alternative would result in a decline in forage condition. All vegetation sub-category parameters would decline.

d. Impacts to Animal Life

(1) Introduction

This section describes the impacts of continuing existing managment and livestock allocation on mule deer, elk, antelope, sage grouse, the endangered Utah prairie dog, and fish. Analysis indicates that other species of wildlife found in the planning unit would not be significantly impacted by this alternative and they are therefore not discussed in this section.

(b) Analysis of Impacts

The following tables show the probable impacts and rationale for predicting these impacts on mule deer, elk, antelope, sage grouse, Utah prairie dog, and fish.

ANALYSIS OF IMPACTS ON MULE DEER

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotments, 875 acres (less than 1 percent of the planning unit).	
The wildlife allocation would remain the same. No provision for increases in deer use would be made.	There are 18 AUMs presently being used by deer in these three allotments and no changes in managment or allocation would result under this alternative.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Forty allotments, 212,182 acres (over 99 percent of the planning unit).	
The forage initially used by deer would be the same as the estimated present use. There would be no further increase allowed. Over allocation of about 850 AUMs on deer winter ranges would result in a reduction of deer numbers. An eventual decrease in forage available to deer could result and the range would not support as many deer as it presently does (109 summer, 1,103 winter). The amount and rate of decline are unknown.	There are presently 1,109 AUMs used by deer on allotments in this component. Twenty-one allotments would be overallocated. Approximately 850 AUMs overallocation would occur on deer winter ranges. This alternative would allow livestock grazing at a higher than current actual use level on 97 percent of the planning unit. This could result in a decrease in forage production.

ANALYSIS OF IMPACTS ON ELK

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotments, 875 acres (less than 1 percent of the planning unit).	
No impacts.	Elk use has not been verified in this area.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Forty allotments, 212,182 acres (over 99 percent of the planning unit).	
Elk presently use six of the 40 allotments (72,908 acres or 34 percent of the planning unit), although the largest amount (34 percent) of the use occurs on Cedar Grove allotment. No increase of AUMs available would be provided. No provision would be made for the newly planted Boulder Mountain elk herd. Overallocation of 303 AUMs on the Seven Mile Allotment would result in competition between elk and livestock for forage and elk numbers could decline. An eventual decrease in the forage production on the planning unit could result and the range would not support the present number of elk (20 summer, 200 winter). The amount and rate of decline are unknown.	There are presently 295 elk AUMs available in this component which this alternative would continue to provide for elk use. The allowable livestock and big game forage use on the Seven Mile Allotment would exceed estimated forage production by a total of 303 AUMs. This alternative would allow livestock grazing at a higher than current actual use level on all elk range except the Fishlake Allotment and forage production could decline.

ANALYSIS OF IMPACTS ON ANTELOPE

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotments, 875 acres (less than 1 percent of the planning unit).	
No impacts.	Antelope do not inhabit this area.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Forty allotments, 212,182 acres (over 99 percent of the planning unit).	
Antelope inhabit 20 of these 40 allotments (165,365 acres or 78 percent of the planning unit). The alternative provides for antelope to continue to use 617 AUMs. No additional antelope would be allowed and no new water sources would be built. Competition between livestock and antelope for water would continue. Overallocation of 320 AUMs on the Loa Winter Allotment could result in the loss of antelope during severe winters. An eventual decrease in the forage available to antelope could result and the range would not be able to support the present number of antelope (394 summer, 750 winter). The amount and rate of decline are unknown.	Most of the allotments in this area have very limited and unreliable water supplies. There is direct competition for water between antelope and livestock primarily during the month of June. Antelope must leave this area when water supplies are exhausted. This alternative would allow livestock grazing at a higher than current actual use level on all antelope range except in Fishlake Allotment. This could result in a decrease in forage production.

ANALYSIS OF IMPACTS ON SAGE GROUSE

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotments, 875 acres (less than 1 percent of the planning unit).	
No impacts.	Sage grouse are not found in this area.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Forty allotments, 212,182 acres (over 99 percent of the planning unit).	
Adverse impacts may occur to sage grouse. Chick survival rate could be reduced and sage grouse populations could decline. The extent and magnitude are unknown.	Possible increased grazing during the spring could reduce key and other desirable forage needed by sage grouse. Succulent green forage is critical during the brooding season (Jarvis, 1974). These effects may be minimial as sage grouse are mobile and can move about to find food and water.

ANALYSIS OF IMPACTS ON ENDANGERED UTAH PRAIRIE DOG

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotments, 875 acres (less than 1 percent of the planning unit).	
No impacts.	Prairie dogs are not found in this area.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Forty allotments, 212,182 acres (over 99 percent of the planning unit).	
The proposal may have adverse effects on the Utah prairie dog habitat. The survival rate of Utah prairie dog litters could decline which would cause a decrease in prairie dog populations, a reduction in the population growth rate or both. Insufficient data are available to determine whether or not the continued existence of the Utah prairie dog would be jeopardized. A U.S. Fish and Wildlife Service (USFWS) formal biological opinion on this matter will be included in the final environmental statement. A copy of an informal consultation reply from USFWS is included in Chapter 9. The magnitude is unknown but could be significant.	Possible increased grazing could reduce key and other desirable forage species needed by prairie dogs during the critical lactating period (Crocker-Bedford, et al., 1975). This impact could be significant as prairie dogs are not highly mobile.

ANALYSIS OF IMPACTS ON FISH

Impacts — Rationale

NO LIVESTOCK GRAZING

Three allotments, 875 acres (less than 1 percent of the planning unit).

No impacts.

The allotments under the No Livestock Grazing component do not contain fisheries.

CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)

Although 18 allotments have streams (18.825 miles), only 10 allotments contain fisheries (10.18 miles). The chart below shows the anticipated impacts to fish habitat. These impacts which deteriorate fish habitat would have adverse impacts to fish but those impacts are not quantifiable with the available data.

Component, Allotment, and Stream	Miles of Stream	Stream Habitat Condition	
		Present	Predicted in 20 Years
Continue Existing Continuous-Seasonal Grazing (Spring, Fall, Winter)			
King Sheep			
Pine Creek	2.0	Fair	Poor
Post Hollow			
Riley Creek	0.75	Fair	Poor
Deleeuw			
Fremont R.	1.0	Fair	Poor
Long Hollow			
Road Creek	0.25	Fair	Poor
North Fremont			
Fremont R.	1.0	Fair	Poor
Donkey Hill			
Fish Creek	0.15	Poor	Poor
Grover			
Fish Creek	0.15	Poor	Poor
River			
Fremont R.	3.63	Good	Fair
Spring Branch			
Fish Creek	0.25	Poor	Poor
Hickman			
Fremont R.	1.0	Fair	Poor
Total	10.18		

The present condition of aquatic/riparian and fisheries habitat, and predicted conditions as a result of the initial and long-term management actions, are shown in Table 3-17. Specific grazing impacts would be removal/elimination of riparian streambank vegetation and physical trampling of the streambank soil and vegetation by livestock.

In grazed areas, these impacts would deteriorate conditions over the existing situation since they would continue to reduce/eliminate key resource parameters, which are the limiting factors to productive and self-sustaining aquatic/ riparian habitats and fisheries, i.e., streambank vegetation, cover, streambank soil stability, pool and water quality (less depth, cover, velocity, oxygen, high temperatures, sedimentation). Specific impacts to these resource parameters were measured by Marcuson (1970) and Gunderson (1968). Appendix III-1 shows a summary of their findings.

Livestock grazing could be increased 41 percent above the apparent 59 percent cattle use in the Bicknell Winter Allotment and sheep use could increase 67 percent. There would be no change in season of use and no rest from yearly heavy use of the riparian zone plants.

An eight-year study by BLM on Big Creek in Rich County, Utah has shown that stream riparian zones will continue to be impacted from grazing unless specific riparian pasture grazing systems and protection are provided. It has also shown that after four years of rest and recovery inside an exclosure, good stream habitat conditions were set back four years to previous poor conditions when trespass livestock were allowed inside the exclosure for only a 6-week period in the spring (Duff, 1978).

Mueggler (1975) indicates that 6 to 8 years of protection from grazing are necessary to restore plant vigor and woody riparian plants. This is also supported by studies on Big Creek, Utah (Duff, 1977). Similar studies in Idaho have also found that 5 to 10 years are necessary for the improvement of streambottom gravels, once the sediment generating impact was alleviated (Platts, 1978). This period is relative to the scope and magnitude of sediment sources, but considering that streams act as a dynamic continuum, water quality impacts from upstream use areas would continue to be felt in the rested pasture reach of a stream. In essence, Platts (1972) indicates ". . . rotation type grazing systems may rest pastures but not streambottoms."

ANALYSIS OF IMPACTS ON FISH (concluded)

Impacts	Rationale
	Generally, riparian vegetation begins growth earlier in the spring and continues growth later into the fall than most upland range plants. During this time, the plants are more palatable than dried range plants and are actively sought by cattle (Platts and Rountree, 1972). Because of this, vegetation in meadows and along streams is invariably closely utilized under any stocking rate or system of grazing. Removal of more than 60 percent of crown can significantly reduce the regrowth potential of some species (Hormay, 1970).

c. Assessment

Deer

The alternative action continues heavy utilization of key deer winter forage (particularly shrub species) on 212,182 acres over 99 percent of the planning unit.

Composition of some key (bitterbrush and young saltbrush) and other desirable plant species is expected to decline. The present deer population on the unit is estimated to be 1,212. They utilize 1,127 AUMs annually. The alternative provides for this but no additional AUMs. Thus, in this unit, over utilization of crucial winter habitat would occur immediately. Growth of the deer herds would stress the crucial winter range in about 1 to 2 years.

Optimal levels of mule deer (about 4,013) through out the unit utilized about 4,242 AUMs in the recent past. Thus in the total unit area, there would be about 3,115 less AUMs available than deer needs projected by UDWR within the next 5 years. Deer winter range would rapidly begin to decline as carrying capacity became exceeded (after about 2 years) and the stressed deer herd would conflict with livestock with a consequent weight loss, low fawn production and survival rate and/or die off occurring.

Elk

The alternative provides 295 AUMs of elk forage which accomodate the existing 220 elk in the planning unit. It would not provide increased allocation for elk winter use. No provisions for the new elk herd (42 elk) on the Boulder Mountains would be made. Elk numbers are currently increasing in the planning unit and over utilization of 303 AUMs of elk forage in the Seven Mile Allotment would result in competition between elk and livestock for forage and would lead to reduction in the elk population. The predicted decline in forage production would lead to reductions of existing elk numbers.

Antelope

The alternative would provide a vegetation allocation for antelope (750 animals) use to remain at the current 617 AUMs. Crucial antelope winter range would continue to be overutilized with a resulting loss of key browse species (black sagebrush and winter fat). Under this alternative, the crucial antelope winter ranges would be about 320 AUMs over-allocated which would result in a loss of antelope during a severe winter. Continued over-utilization of spring antelope ranges would result in losses of succulent forage including key species. This would result in lost fawn production and/or survival. The amount is unquantifiable at this time.

Sage Grouse

The continued apparent overuse of vegetation in the spring would result in a reduction of key and other desirable plant species. These plants are critical for nesting success and brood survival during the critical sage grouse brooding period. The potential loss is unknown.

Endangered Utah Prairie Dog

The key to survival for this endangered species is to have cool season grasses available during lactation period and cool season grasses and other succulent vegetation available as soon as the young start leaving their burrows. The alternative would continue the reduction of desirable plant species in the spring and competition with livestock for succulent vegetation would adversely affect prairie dog survival. Present numbers of prairie dogs and the rate of population growth would decline. Insufficient data are available to determine whether or not the continued existence of the Utah prairie dog would be jeopardized. Formal consultation on this matter has been initiated with the USFWS.

Fish

Numerous studies show that cattle trampling along stream banks would break off overhanging banks and continue to suppress cover and shade along creek banks which would reduce the quality of habitat for fish. The fisheries habitat condition would be expected to change as shown below:

Approximate Miles in Habitat Condition Class

	Good	Fair	Poor
Present	4	6	1
Prediction in 20 years	0	4	7

Figure 3-1 diagrams how these changes would affect trout populations.

d. Conclusions

Big game use is summarized below:

		Current Use		Long-Term Allocation		Long-Term Projected Needs	
		Number	AUMs	Number	AUMs	Number	AUMs
Deer	Summer	109	1,127	109	1,127[a]	4,013	4,242
	Winter	1,103		1,103			
Antelope							
	Summer	394	617	394	617	394	617
	Winter	750		750		750	
Elk	Summer	20	295	20	295	20	402
	Winter	200		200		242	

[a] Total number only, not broken into summer and winter use.

Current trends indicate that there would be an initial overall increase in the levels of big game use on the entire unit. On 21 allotments, overuse would occur and present deer numbers would not be supported by the existing vegetation production. This alternative would allow livestock grazing at levels higher than current actual use on 97 percent of the planning unit and forage production would continue to decline. With eventual declines in forage production, the range would not be able to support present big game. This would result in over-utilization of deer crucial winter ranges, antelope spring and winter ranges, and elk summer and winter use areas. This would result in a net loss of the animals which is unquantifiable but significant as is shown on the above chart.

Sage Grouse

There would be an overall decrease in the quality of sage grouse habitat both in spring and winter crucial areas. The action of over-obligation of key and other desirable forage species would result in an unquantifiable reduction in the sage grouse population.

Endangered Utah Prairie Dog

Reduction of key and other desirable species in the spring, during the critical lactating period, would adversely affect survival of young prairie dogs and lead to a reduction in prairie dog populations and/or a reduction in the rate of population growth. The magnitude of these effects is unknown. Due to the endangered status of this animal, any adverse effect could be significant. Formal consultation concerning the prairie dog has been initiated with the USFWS to determine whether or not the continued existence of the Utah prairie dog would be jeopardized. Chapter 9 contains a copy of an informal consultation response from the USFWS.

Fish

The quantity and quality of fish in the planning unit fisheries would deteriorate on all of the 10.18 miles where livestock would continue to graze.

e. Recreation

(1) Introduction

This section describes the anticipated impacts the Continuation of Present Range Management and Level of Use Alternative would have on hunting and fishing opportunities (i.e. quality and number of deer, elk, antelope and sage grouse hunter days and trout fisherman days) presently provided by the Parker Mountain Planning Unit.

(2) Analysis of Impacts

The following table shows the anticipated changes and the rationale for predicting these changes that would occur to hunting and fishing opportunities.

ANALYSIS OF IMPACTS ON RECREATION

Impacts	Rationale
DEER HUNTING	
Entire planning unit, 39 allotments (213,057 acres).	
No change is anticipated from present hunter success and hunter days provided by the planning unit.	Hunting demand for deer is high. Historically in the area any increase in deer has resulted in an increase in hunter success, attracting more hunters to the area and resulting in an increase in hunter days. Any decrease in deer has resulted in the opposite effect (UDWR, 1978). This alternative would not alter deer numbers provided by the planning unit.
ANTELOPE HUNTING	
The following 19 allotments in the Continue Existing Continuous-Seasonal Grazing (Spring, Fall, Winter) component would be affected: Bicknell Spring, Cedar Peak, Hare Lake, Smooth Knoll, Bicknell Winter, Flat Top, King Sheep, Cedar Grove, Cyclone Co-op, Co-op, Cyclone, Fishlake, Post Hollow, Seven Mile, Loa Winter, Deleeuw, Long Hollow, Terza Flat and North Fremont. This would include 165,365 acres (78 percent of the planning unit).	
No change is anticipated from present hunter success and hunter days provided by the planning unit.	Hunting demand for antelope is high. Historically in the area any increase or decrease in antelope has resulted in an increase or decrease in available hunting permits and hunter days (UDWR, 1978). This alternative would not alter antelope numbers provided by the planning unit.
ELK HUNTING	
The following 10 allotments in the Continue Existing Continuous-Seasonal Grazing (Spring, Fall, Winter) component would be affected: Bicknell Spring, Cedar Peak, Hare Lake, Smooth Knoll, Cedar Grove, Cyclone Co-op, Cyclone, Co-op, Fishlake and Seven Mile. This would include 103,122 acres (48 percent) of the planning unit.	
No change is anticipated from present hunter success and hunter days provided by the planning unit.	Hunting demand for elk is high. Historically in the area any increase or decrease in elk has resulted in an increase or decrease in available hunting permits and hunter days (UDWR, 1978). This alternative would not alter elk numbers provided by the planning unit.

ANALYSIS OF IMPACTS ON RECREATION (concluded)

Impacts	Rationale
SAGE GROUSE HUNTING	
The following 19 allotments in the Continue Existing Continuous-Seasonal Grazing (Spring, Fall, Winter) component would be affected: Bicknell Spring, Cedar Peak, Hare Lake, Smooth Knoll, Bicknell Winter, Flat Top, King Sheep, Cedar Grove, Cyclone Co-op, Cyclone, Co-op, Fishlake, Post Hollow, Loa Winter, Deleeuw, Long Hollow, Terza Flat, North Fremont, and Seven Mile.	
This alternative would result in an unquantified decrease in quality and number of hunter days below the 1,119 sage grouse hunter days presently provided by the planning unit.	Hunting demand for sage grouse is high. Historically in the area, any decrease in sage grouse has resulted in a decrease in hunter success, attracting less hunters to the area and resulting in a decrease in hunter days. This alternative would result in an unquantified decrease in sage grouse numbers within the planning unit.
TROUT FISHING	
The following 11 allotments in the Continue Existing Continuous-Seasonal Grazing (Spring, Fall, Winter) component would be affected: King Sheep, Post Hollow, Deleeuw, North Fremont, Loa Winter, Long Hollow, River, Grover, Donkey Hill, Spring Branch and Hickman.	
This alternative would result in an unquantified decrease in quality and number of fisherman days provided by the Fremont River, Pine Creek, Riley Creek, Road Creek, and Fish Creek. There would be no impact to fishing opportunities presently provided by Mill Meadow Reservoir. Overall, this alternative would result in an unquantified decrease in quality and number of fisherman days below the 3,000 fisherman days presently provided by the planning unit.	Any decrease in trout production (number and size) would result in a decrease in fisherman success, attracting less fishermen to the area, resulting in a decrease in fisherman days. This alternative would continue an unquantified decrease in trout production in all fisneries except Mill Meadow Reservoir.

(3) Overall Assessment

The basis of impacts on recreation would include any change in management or allocation that would alter numbers of deer, antelope, elk, and sage grouse available for hunting and trout available for fishing.

The analysis assumes that with present numbers of game and fish, the planning unit is providing a certain amount of hunter-fisherman success, which results in the present number of hunter-fisherman days. Hunting and fishing demand is high. With any increase or decrease in game and fish numbers, the planning unit would provide for a corresponding increase or decrease in hunter-fisherman success and days.

This alternative would not alter present deer, elk, or antelope numbers, and would therefore not change big game hunter success and hunter days presently provided by the planning unit.

A potential decrease in sage grouse numbers would result in an unquantified decrease in sage grouse hunting success and resultant hunter days below the 1,119 hunter days presently provided by the planning unit.

The continued decrease in trout production (numbers and size) in all fisheries except Mill Meadow Reservoir would result in an unquantified decrease in quality and number of fisherman days provided by the Fremont River, Pine Creek, Riley Creek, Road Creek, and Fish Creek. There would be no impact to fishing opportunities presently provided by Mill Meadow Reservoir. Overall, this alternative would provide an unquantified decrease in the quality and number of fisherman days below the 3,000 fisherman days presently provided by the planning unit.

(4) Conclusions

As a result of the Continuation of Present Range Management and Level of Use alternative, big game hunting opportunities within the Parker Mountain Planning Unit would not be affected. The planning unit would provide an unquantified decrease in sage grouse hunting success and resultant hunter days below the 1,119 hunter days presently provided. The planning unit would provide an unquantified decrease in fisherman success and resultant fisherman days from the 3,000 fisherman days presently provided.

f. Impacts to Livestock Grazing

(1) Introduction

This section describes the anticipated impacts this alternative would have on livestock grazing.

(2) Analysis of Impacts

The following table shows the probable impacts on livestock grazing and rationale for projecting impacts.

ANALYSIS OF IMPACTS ON LIVESTOCK GRAZING

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotments, 875 acres (less than 1 percent of the planning unit).	
There would be no impact to livestock grazing within 20 years by implementing the proposal.	Livestock have not been licensed to graze Wildlife, Tanner, and Dez Hickman allotments since 1970 or before. This situation would continue.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Forty allotments, 212,182 acres (99 percent of the planning unit).	
This component would involve 99 separate livestock operators. There may be no impact to livestock grazing within 20 years by implementing the alternative; however, grazing for the past several years has been at approximately 64 percent of allocation, so it is possible that actual grazing use could increase by 36 percent.	The alternative is to allow livestock grazing at 100 percent of the current allocation. Actual grazing use could increase by 36 percent; but there may be some factor, currently unidentified, that is holding the grazing at current levels. Therefore, livestock grazing may continue as it has the past several years.

(3) Overall Assessment

Livestock would continue to be excluded from three allotments, and all forage would be allocated to wildlife. On 40 allotments, operators would be authorized full use of current allocation. If the full allocation is utilized, a 36 percent increase in livestock use would occur. This increase in use would affect economics and vegetation directly and soil, water, wildlife, and recreation indirectly.

(4) Conclusion

No change in current allocation would be authorized, but a 36 percent increase in actual livestock use could occur on the planning unit.

g. Economics

(1) Introduction

This alternative would leave operation budgets and the local economy unchanged in all aspects except the wealth position of the livestock operators.

(2.) Analysis of Impacts

The following analysis shows the probable impact of the loss of 4,712 allocated AUMs on livestock operators' wealth positions and the rationale for projecting this impact. For the purpose of this analysis, it has been assumed that the present nonuse of alloted livestock AUMs would continue. This allows the analysis of a "worst case" economic situation for this alternative.

ANALYSIS OF IMPACT OF LOSS OF AUMs
ON OPERATOR WEALTH POSITION

Impacts	Rationale
ECONOMICS	
Probable Impacts:	
a. Change in operator wealth position:	Wealth changes were based on the number of AUMs not presently being used by the average operator in each size category and the estimated average value per AUM for the area of $22.50 (Bagley, 1979). The change in wealth is based on the BLM regulation that after three years of non-use, grazing permits may be cancelled. It is inconceivable that BLM would continue to allow non-use in perpetuity and therefore those permits, or parts thereof, that are in non-use would be lost.
b. Local economic impacts: The impact to the local economy would be the cumulative loss of $106,020 in operator wealth represented by the 4,712 AUMs that would be lost.	

	Size of Operation		
	Small	Medium	Large
Change in number of AUMs	- 53	- 134	- 137
Change in wealth position	$-1,193	$-3,015	$-3,083

(3) Overall Assessment

Under BLM regulations livestock operators can lose AUMs from permits after 3 years of non-use. The current estimated active livestock use of 8,285 AUMs is based on the average authorized (licensed) use for the 3 year period 1975-1977.

It is assumed under this alternative that these AUMs would continue in non-use and would be revoked by the BLM. This would represent a loss of about 36 percent of the total AUMs presently alloted to livestock on the planning unit. The average small operator could lose about 59 percent of his present allocation with the average medium and large operators losing about 65 percent and 52 percent respectively.

(4) Conclusion

Reduction of operator wealth position would be as follows: Small $1,193; medium $3,015; large $3,083. Total loss of wealth to operators on the planning unit is estimated to be about $106,020.

h. Sociology

(1) Introduction

This section describes the changes which occurred by announcing the proposed action. Only attitudes and expectations have been affected by the "No Action" alternative.

(2) Analysis of Impacts

The following table shows the probable impacts and rationale for those projected impacts on attitudes and expectations.

ANALYSIS OF IMPACTS ON SOCIOLOGY

Impacts	Rationale
People in all of Wayne County and in the Grass Valley portions of Sevier and Piute counties would be affected.	
If no action were implemented, the resentment caused by the announcement of the proposal would persist and negative feelings toward the federal government would continue. The "No Action" alternative would have no redeeming value in the livestockman's opinion, and they would continue to believe their grazing privileges would be cut.	Past announcements of downward adjustments in grazing allocations have caused ill feelings toward the government among livestockmen and other local residents. A public meeting announcing the proposed action caused negative feelings even though a grazing level of 135 percent above the past three or four years was proposed.

(3) Overall Assessment

The people in the planning unit feel that government is meddling in their affairs. They resent this perceived intervention, even though their grazing privileges would not change.

(4) Conclusion

The announcement of the proposed action caused resentment, and this resentment would persisit if the "No Action" alternative is implemented. The people would continue to believe big government is interfering with their lives, and the alternative would have no redeeming value in their lives. Ranchers probably would not believe the "No Action" alternative would be implemented, but would continue to believe their grazing privileges would be cut.

Under this alternative there would not be any real social impact, but livestockmen would perceive a loss of personal agency, frustration and alienation with government would persist.

C. MAXIMUM CONSTRAINTS OF LIVESTOCK GRAZING

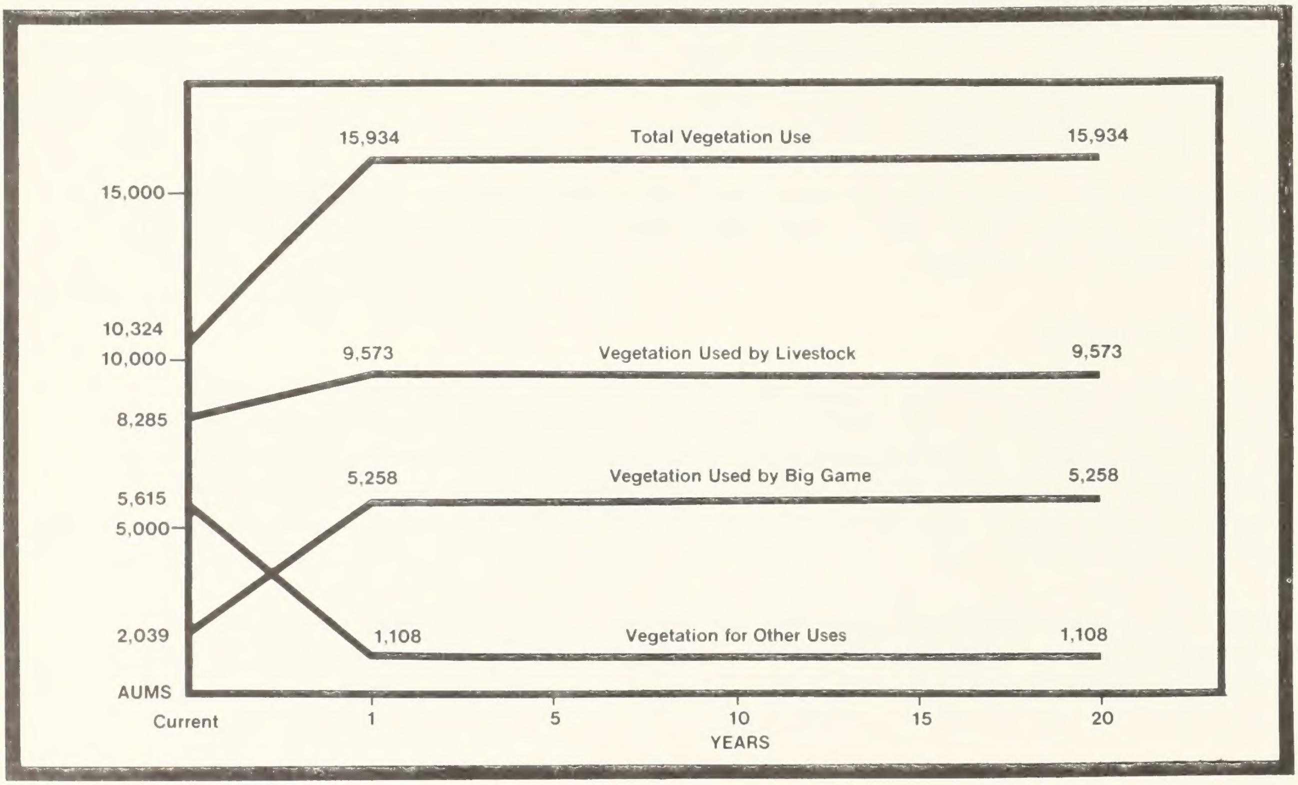
1 Description of the Alternative

a. Purpose

This alternative would constrain livestock grazing on the Parker Mountain Planning Unit by reserving vegetation for wildlife, recreation, and other uses at the levels requested in the Unit Resource Analysis (URA). The allocations in this alternative were developed by reserving vegetation for big game and recreation first and then supplying livestock with their existing allocation if possible. Any vegetation production above big game and recreation demands and existing livestock allocations would be reserved for other uses. Overall, 60 percent of the vegetation production on public lands in the planning unit would be allocated to livestock, 33 percent to wildlife, and 7 percent for other uses.

b. Components of the Alternative Action

This alternative is divided into four components. A summary of the components is shown on Table 8-2 and the allotment listing for each is shown in Appendix VIII-2. The existing and alternative levels of vegetation use are:



EXISTING AND ALTERNATIVE (MAXIMUM CONSTRAINTS OF LIVESTOCK GRAZING) VEGETATION USE

TABLE 8-2

Summary of Existing Vegetation Use and Alternate Allocation
for Maximum Constraints on Livestock Grazing

Alternative Action Component	Existing Livestock and Wildlife Grazing Situation						Alternate Allocation (AUMs)		
	Vegetation Production AUMs	Present Livestock Use				Est. Current Wildlife Use (AUMs)	Livestock	Wildlife	Other Uses
		Kinds	Number	AUMs Pref.	AUMs Actual				
No Livestock Grazing (16 allotments)	949	cattle sheep	393 756	1,228	595	427	0	929	20
Continue Existing Continuous-Seasonal Grazing (Spring, Fall Winter) (8 Allotments)	7,159	cattle sheep	1,746 6,631	4,813	3,744	483	4,813	1,264	1,082
Continue With Continuous-Seasonal Grazing With Adjustment of Grazing Allocation (Spring, Fall, Winter) (12 Allotments)	3,362	cattle sheep	902 7,079	3,412	2,217	672	1,380	1,982	0
Continue With Continuous-Seasonal Grazing Adjusted By Utilization (Spring, Fall, Winter) (8 Allotments)	4,469	cattle sheep	1,139 3,416	3,544	1,729	457	3,380	1,883	6
Total	15,939	cattle sheep	4,180 17,882	12,997	8,285	2,039	9,573	5,258	1,108

Source: Appendix VIII-C.

The four components are: (1) no livestock grazing, (2) continue existing continuous-seasonal grazing (spring, fall, winter), (3) continue with continuous-seasonal grazing with adjustment of grazing allocation (spring, fall, winter), and (4) continue with continuous-seasonal grazing adjusted by utilization (spring, fall, winter). Developments that would be included in this alternative are shown on Figure 8-1 and listed with an estimate of acreage disturbance on Table 8-3).

(1) No Livestock Grazing

Sixteen allotments, comprising 39,343 acres or 19 percent of the public land in the planning unit, are included in this component. The Riparian Allotment would be created from part of the Bicknell Winter and King Sheep allotments. All the vegetation produced on the allotments in this component (949 AUMs or 6 percent of the vegetation production on public lands in the planning unit) would be allocated for wildlife and recreation use.

Fencing would be required to exclude livestock grazing from the Riparian (2 miles), Deleeuw (8.5 miles), Hickman (1 mile), Miner's Mountain (10 miles), Torrey Town (3 miles), and River (1.5 miles) allotments. The following developments would be required:

Reservoirs	1 each
Fencing	26 miles (18 miles around state and private land).

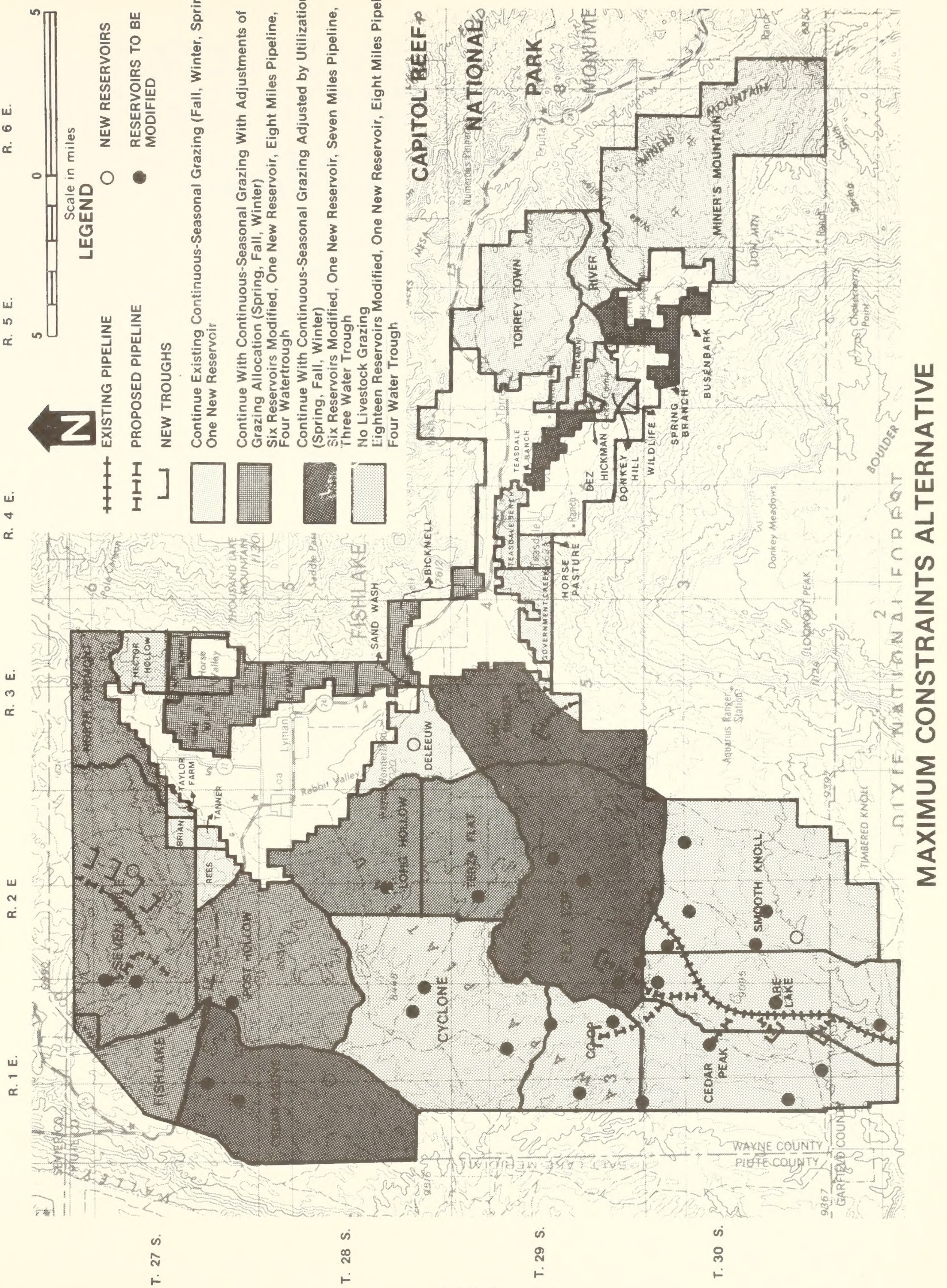
(2) Continue Existing Continuous-Seasonal Grazing (Fall, Winter, Spring)

This component would involve eight allotments and 69,330 acres or 32 percent of the public land in the planning unit. About 45 percent of the vegetation produced on public lands in the planning unit is in this component. A total of 4,813 AUMs (100 percent of the current allocation) would be allocated to livestock. Livestock use for the past 3 years has averaged 78 percent of the current allocation. Wildlife would be allocated 1,264 AUMs and 1,082 AUMs would be provided for other use. Two AMPs would be prepared and the six existing AMPs revised. The following developments would be required:

Reservoirs (new)	1 each
Reservoirs (modified)	18 each
Pipeline	8 miles
Water Troughs	4 each

(3) Continue With Continuous-Seasonal Grazing With Adjustment of Grazing Allocation (Spring, Fall, Winter)

This component would involve 12 allotments comprised of 61,167 acres or 29 percent of the public lands in the planning unit. About 21 percent of the vegetation produced on public lands in the planning unit is on the allotments under this component. An overall reduction of 59 percent of the current livestock allocation or 38 percent reduction from the past 3 years actual livestock use would be required in this component mainly to meet wildlife demands. (Individual allotments would be reduced from a low of 15 percent to as much as 97 percent of the current allocation.) Grazing use would be limited to 60 percent of annual production on key species. A total of 1,380 AUMs would be allocated for livestock and 1,982 AUMs for wildlife. One AMP would be revised and 11 new AMPs prepared.



MAXIMUM CONSTRAINTS ALTERNATIVE

FIGURE 8-1

TABLE 8-3

Summary of Acreage Disturbed
By Range Developments

Item	Units	Total Acres Disturbed
Water Troughs	11 each	3
Water Pipelines	23 miles	30
Reservoirs	4 each	4
Reservoir Modification	30 each	30
Fencing	33 miles	33
Total		100

One reservoir would be added to the Seven Mile Allotment along with four water troughs and 8 miles of pipeline. Six existing reservoirs would be modified. The Terza Flat and Long Hollow allotments would be separated from Cyclone Co-op by 7 miles of new fence.

(4) Continue With Continuous-Seasonal Grazing Adjusted By Utilization (Spring, Fall, Winter)

This component would include eight allotments comprised of 43,217 acres or about 20 percent of the public lands in the planning unit. About 28 percent of the vegetation produced on public lands in the planning unit would be managed under this component. Livestock would be allocated 3,380 AUMs, wildlife 1,083 AUMs, and 6 AUMs would remain for other uses.

The total surveyed vegetation production on the Bicknell Winter, Flat Top, King Sheep, and Cedar Grove allotments indicate that less than a 6 percent reduction of use would be needed and survey accuracy is usually considered to be only about 90 percent accurate. Therefore, actual use would be adjusted by utilization. The effect of removing the Riparian Allotment from the King Sheep and Bicknell Winter allotments would also be evaluated by utilization. On the balance of the allotments (Busenbark, Grover, Spring Branch, and Teasdale Ranch), no data on current trend, utilization, or actual use are available and adjustments would not be made until data are available. Utilization would not exceed 60 percent of current annual growth on key species. Livestock use would continue to be reduced to allow all use for wildlife up to 60 percent. When this point is reached, wildlife numbers would be controlled so as not to exceed 60 percent utilization of the current annual growth on key species. When proposed levels of use are established, the three existing AMPs would be revised and new AMPs prepared for the remaining five allotments.

Water developments would be required on Cedar Grove, Flat Top, King Sheep, and Bicknell Winter allotments. The water development on King Sheep and Bicknell Winter allotments would be needed because formation of the Riparian Allotment would eliminate Pine Creek, as a watering source, from those allotments. The following developments would be required:

Reservoirs (new)	1 each
Reservoirs (modified)	6 each
Pipeline	7 miles
Water troughs	3 each

2. Support Requirements

a. Labor (Work-Months) and Development Costs

Preparation or revision of the 28 AMPs for this alternative would require approximately 56 work-months. In addition, approximately 4 work-months would be needed to administer and supervise the required developments.

The developments would be constructed through contracts with private business. BLM personnel would complete the engineering and supervise construction. Estimated implementation and development costs would be about $330,000.00. The annual operational and maintenance costs for existing and new developments would be about $46,000.00 for BLM and $6,000 for livestock operators.

b. Administration, Control of Unauthorized Use, and Monitoring

These would be as described in Chapter 1 for the proposed action.

c. Implementation

Implementation procedures would be as described in Chapter 1 for the proposed action. Table 8-4 shows the sequence of implementation by year for this alternative.

3. Design, Operation, and Maintenance Considerations for Development

Design, operation, and maintenance considerations for development would be as described in Chapter 1 for the proposed action.

4. Environment Impacts of the Alternative

Analysis indicates that there would be no significant impacts on climate, air quality, geology, topography, paleontological resources, and historical resources. Therefore these resources are not discussed further in this alternative. Other resource components are introduced and analysis procedures and assumptions given for each resource component.

The impact analysis assesses the impacts that would result from constraining livestock grazing by reserving vegetation production for big game and recreation.

a. Soils

(1) Introduction

This section analyzes the impacts to the soils under the Maximum Constraints of Livestock Grazing alternative. The impact to sediment yield and soil erosion would be minimal because the vegetation ground cover is not expected to change significantly.

(2) Analysis of Impacts

The following table shows the projected impacts on sediment yield and soil erosion conditions and the rationale for the projections.

TABLE 8-4

Grazing Management Program Implementation Schedule

Component	Year	Discussion
No Grazing	First	Implement the alternative by decision.
	Second	Construct one new reservoir in the Deleeuw Allotment for wildlife use. Construct 8 miles of fence to develop the Riparian Allotment and exclude livestock grazing.
Continue Existing Continuous-Seasonal Grazing (Spring, Fall, Winter)	First	Implement the alternative by decision.
	Second	Construct one new reservoir in the Smooth Knoll Allotment and modify the 18 existing reservoirs located in all the various allotments. Construct 8 miles of new pipeline and four water troughs (Figure 8-1).
	Fifth	Prepare or update AMPS on all eight allotments to document the grazing program. If monitoring, for the past 5 years, show adjustments are needed; these would be made at this time through agreement and decision.
Continue With Continuous Seasonal Grazing With Adjustment of Grazing Allocation (Spring, Fall, Winter).	First	Prepare or revise AMPs and implement the proposal on seven allotments by agreement and decision. Conduct a forage survey on five allotments to redetermine carrying capacity.
	Second	Prepare five new AMPs and implement the grazing proposal, including the livestock grazing reduction if needed by agreement and decision. Construct one new reservoir and modify six. Install 8 miles of pipeline, four water troughs, and 7 miles of fence.
Continue With Continuous Seasonal Grazing Adjusted by Utilization (Winter)	First	Prepare five new AMPs, revise three AMPs, and implement the complete proposal by agreement and decision. The annual permit would stipulate the level of use allowed on key species and provisions made for immediate removal of livestock when that level of use is reached.

TABLE 8-4 (concluded)

Component	Year	Discussion
	Second	Construct one new reservoir in the Cedar Grove Allotment and modify six reservoirs; four in the Flat Top Allotment and two in the Cedar Grove Allotment. Construct 7 miles of pipeline and three water troughs.
	Second through Fourth	Careful monitoring of utilization on key species would be conducted and grazing use modified as explained in the proposal.
	Fifth	The eight AMPs would be revised and permanent adjustments in livestock grazing authorization would be made through decision.

ANALYSIS OF IMPACTS ON SEDIMENT YIELD

Impacts	Rationale
NO LIVESTOCK GRAZING	
Sixteen allotments, 39,343 acres (19 percent of the planning unit).	
The present sediment yield is estimated to be 126 acre-feet per year and is not expected to change within the next 20 years as a result of this alternative. These conditions are expected to remain unchanged for the next 20 years.	Sediment yield is a function of surface geology, soils, climate, runoff characteristics, topography, land use, upland erosion, channel erosion, and ground cover. The vegetation ground cover is not expected to change, and other factors would not be changed by the alternative; therefore, the sediment yield would not change.
The construction of one reservoir and 26 miles of fence and the resulting disturbance of 27 acres would cause an increase in soil movement until the vegetation is established (in 1 to 3 years). The impact would be slight because the area affected would be small.	Past experience has shown that construction of this type reservoir would disturb 1 acres of vegetation ground cover. Also, experience has shown that the construction of 26 miles of fencing would disturb 10 to 80 percent of the vegetation ground cover on 26 acres.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Seven allotments, 69,330 acres (32 percent of the planning unit).	
The present sediment yield is estimated to be 43.7 acre-feet per year. The sediment yield would be reduced under this alternative by less than 3 acre-feet per year. These conditions are expected to remain unchanged for the next 20 years.	Sediment yield is a function of surface geology, soils, climate, runoff characteristics, topography, land use, upland erosion, channel erosion, and ground cover. The vegetation ground cover would increase from the current 15 percent to 16 percent.
Development would affect 12 acres (one reservoir, 8 miles of pipeline, and four water troughs). The construction and resulting disturbances on 12 acres would cause an increase in soil movement until the vegetation is established (in 1 to 3 years). The impact would be slight because the area affected would be small.	Past experience has shown that construction of this type reservoir would disturb 1 acre of vegetation ground cover, and construction of 8 miles of pipeline and four water troughs would disturb 10 to 80 percent of the vegetation ground cover on 10 acres and 1 acre, respectively.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Fall, Winter, Spring)	
Twelve allotments, 61,167 acres (29 percent of the planning unit).	
The present sediment yield is estimated to be 38.5 acre-feet per year. These conditions are expected to remain unchanged for the next 20 years.	Sediment yield is a function of surface geology, soils, climate, runoff characteristics, topography, land use, upland erosion, channel erosion, and ground cover. The vegetation ground cover and other factors are not expected to change.
Development would affect 12 acres (one reservoir, 8 miles of pipeline, and four water troughs). The construction and resulting disturbances on 12 acres would cause an increase in soil movement until the vegetation is established (in 1 to 3 years). The impact would be slight because the area affected would be small.	Past experience has shown that construction of this type reservoir would disturb 1 acre of vegetation ground cover. Also, experience has shown that construction of the 8 miles of pipeline and four troughs would disturb 10 to 80 percent of the vegetation ground cover on 10 acres and 1 acre, respectively.

ANALYSIS OF IMPACTS ON SEDIMENT YIELD (concluded)

Impacts	Rationale
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Fall, Winter, Spring)	
Eight allotments, 43,217 acres (20 percent of the planning unit).	
The present sediment yield is estimated to be 27.2 acre-feet per year. The sediment yield would be reduced by less than 3 acre-feet per year. These conditions are expected to remain unchanged for the next 20 years.	Sediment yield is a function of surface geology, soils, climate, runoff characteristics, topography, land use, upland erosion, channel erosion, and ground cover. The increase in vegetation ground cover from 19 percent to 20 percent would decrease the sediment yield.
Developments would affect 10.5 acres (one reservoir, 7 miles of pipeline and three water troughs). The construction and resulting disturbance on 10.5 acres would cause an increase in soil movement until the vegetation is established (in 1 to 3 years). The impact would be slight because the area affected would be small.	Past experience has shown that construction of this type reservoir would disturb 1 acre of vegetation ground cover. Also, experience has shown that construction of the 7 miles of pipeline and three troughs would disturb 10 to 80 percent of the vegetation ground cover on 8.75 acres and 0.75 acre, respectively.

ANALYSIS OF IMPACTS ON SOIL EROSION CONDITION

Impacts	Rationale
NO LIVESTOCK GRAZING	
Sixteen allotments, 39,340 acres (19 percent of the planning unit).	
The current soil erosion conditions on the allotments are: 2 percent of the area is classified as stable, 57 percent of the area is classified as slight, 31 percent of the area is classified as moderate, 9 percent of the area is classified as critical, and 1 percent is unclassified. These conditions are expected to remian unchanged for the next 20 years.	Soil erosion is related to the amount of vegetation ground cover present (Bentley and Eggleston, 1977). Since the vegetation ground cover is not expected to change the erosion condition would remain unchanged.
Developments would affect 27 acres (one reservoir, and 26 miles of fencing). The construction and resulting disturbances on the 27 acres would cause an increase in soil erosion until vegetation is established (in 1 to 3 years). The significance on soil erosion would be minimal due to the area involved.	Past experience has shown that construction of this type reservoir would disturb 1 acre of vegetation ground cover. Also, experience has shown that the 26 miles of fencing would disturb 10 to 80 percent of the vegetation ground cover on 26 acres.
CONTINUE EXISITNG CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Eight allotments, 69,330 acres (32 percent of the planning unit).	
The current soil erosion conditions on the allotments are: 60 percent of the area is classified as stable, 39 percent of the area is classified as slight, and 1 percent of the area is classified as moderate. These conditions are expected to remain unchanged for the next 20 years.	Soil erosion is related to the amount of vegetation ground cover present (Bentley and Eggleston, 1977). Since the vegetation ground cover is expected to increase from the current 15 percent to 16 percent the erosion condition would improve.
Development would affect 12 acres (one reservoir, 8 miles of pipeline, and four water troughs). The construction and resulting disturbances on the 12 acres would cause an increase in soil erosion until vegetation is established (in 1 to 3 years). The significance to soil erosion would be minimal due to the size of the area involved.	Past experience has shown that construction of this reservoir would disturb 1 acre of vegetation ground cover. Also, experience has shown that the 8 miles of pipeline and four water troughs would disturb 10 to 80 percent of the vegetation ground cover on 10 acres and 1 acre respectively.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Fall, Winter, Spring)	
Twelve allotments, 61,167 acres (29 percent of the planning unit).	
The current soil erosion conditions on the allotments are: 18 percent of the area is classified as stable, 61 percent of the area is classified as slight, 16 percent of the area is classified as moderate, and 5 percent is unclassified. These conditions are expected to remian unchanged for the next 20 years.	Soil erosion is related to the amount of vegetation ground cover present (Bentley and Eggleston, 1977). Since the vegetation ground cover is not expected to change, the erosion condition would remain unchanged.

ANALYSIS OF IMPACTS ON SOIL EROSION CONDITION (continued)

Impacts	Rationale
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Fall, Winter, Spring) (continued)	
Development would affect 12 acres (one reservoir, 8 miles of pipeline, and four water troughs).	Past experience has shown that construction of this type reservoir would disturb 1 acre of vegetation ground cover. Also, experience has shown that the 8 miles of pipeline and four water troughs would disturb 10 to 80 percent of the vegetation ground cover on 10 acres and 1 acre respectively.
The construction and resulting disturbances on the 12 acres would cause an increase in soil erosion until vegetation is established (in 1 to 3 years). The significance on soil erosion would be minimal due to the size of the area involved.	
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Fall, Winter, Spring)	
Eight allotments, 43,217 acres (20 percent of the planning unit).	
The current soil erosion conditions on the allotments are: 27 percent of the area is classified as stable, 66 percent of the area is classified as slight, and 7 percent of the area is classified as moderate. These conditions are expected to remain unchanged for the next 20 years.	Soil erosion is related to the amount of vegetation ground cover present (Bentley and Eggleston, 1977). Since the vegetation ground cover is expected to increase from the current 19 percent to 20 percent, the erosion condition should improve.
Development would affect 10.5 acres (one reservoir, 7 miles of pipeline, and three water troughs).	Past experience has shown that construction of this type reservoir would disturb 1 acre of vegetation ground cover. Also, experience has shown that the 7 miles of pipeline and three water troughs would disturb 10 to 80 percent of the vegetation ground cover on 8.75 acres and 0.75 acres, respectively.
The construction and resulting disturbances on the 10.5 acres would cause an increase in soil erosion until vegetation is established (in 1 to 3 years). The significance on soil erosion would be minimal due to the size of the area involved.	

(3) Assessment

The present sediment yield is estimated to be 235.4 acre-feet per year. Since sediment yield is related to the amount of vegetation ground cover which is not expected to be significantly affected, the sediment yield would not be significantly affected and would remain the same as in the proposal. Soil erosion is also related to the amount of vegetation ground cover and therefore it would not be significantly affected and would remain the same as in the proposal.

The construction of reservoirs, pipelines, and troughs would cause an increase in soil movement until the vegetation is estalished in 1 to 3 years.

(4) Conclusion

Change from the present sediment yield and soil erosion conditions are not expected to be significantly affected by this alternative and would remain the same as in the proposal.

b. Water Resources

(1) Introduction

This section analyzes the impacts on water quality and water quantity under the Maximum Constraints of Livestock Grazing alternative. Water quantity would be slightly affected in that runoff would decrease and infiltration would increase due to changes in the vegetative ground cover. The overall water quality would be improved since groundwater contains less sediment, coliform, and other pollutants found in surface runoff.

(2) Analysis of Impacts

The following table shows the projected impacts to water quantity and quality and the rationale for the projections.

ANALYSIS OF IMPACTS ON WATER QUANTITY

Impacts	Rationale
NO LIVESTOCK GRAZING	
Sixteen allotments, 39,343 acres (19 percent of the planning unit).	
The present water yield from these allotments is 91 acre-feet per year. Surface runoff would decrease and infiltration would increase to a slight extent. Because of increased infiltration, ground water production is expected to increase. These conditions are expected to remain unchanged for the next 20 years. There would be no net change in water yield, except for the 368,400 gallons of water that would no longer be consumed by livestock.	Animal grazing affects water yield by altering vegetation ground cover and soil compaction. Estimates show that the vegetation ground cover would not significantly change. A decrease in soil compaction would increase infiltration. Livestock consume 300 gallons of water per AUM (Stoddard and Smith, 1955). Under this component, the amount of AUMs provided for livestock would be reduced from 1,228 to 0.
Developments would affect 27 acres (one reservoir, and 26 miles of fencing).	The water retained in the reservoir would be lost due to animal consumption, evaporation, or seepage on the site.
The reservoir would retain between 1 to 5 acre-feet of water which would reduce the downstream water yield. The 26 miles of fencing would not have a significant impact on water quantity.	
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Fall, Winter, Spring)	
Seven allotments, 69,300 acres (32 percent of the planning unit).	
The present water yield from these allotments is 5,950 acre-feet per year. Surface runoff would decrease and infiltration would increase. Because of increased infiltration, ground water production is expected to increase. These conditions are expected to remain unchanged for the next 20 years.	Annual grazing affects water yield by altering the vegetation ground cover and the soil compaction. Estimates show that vegetation ground cover would increase approximately 1 percent which with a decrease in soil compaction would increase infiltration.
There would be no net change in water yield due to livestock consumption or any other factor.	Livestock consume 300 gallons of water per AUM (Stoddard and Smith, 1955). Under this component, the amount of AUMs provided for livestock would not change.
Developments would affect 12 acres (one reservoir, 8 miles of pipeline, and four water troughs).	
The reservoir would retain between 1 to 5 acre-feet of water which would reduce the downstream water yield. The 8 miles of pipeline and four water troughs would not have a significant impact on water quantity.	The water retained in the reservoir would be lost for downstream utilization due to animal consumption, evaporation or seepage on the site.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Fall, Winter, Spring)	
Twelve allotments, 61,167 acres (29 percent of the planning unit).	
The present water yield from these allotments is 3,151 acre-feet per year. Runoff would decrease and infiltration increase to a slight extent. Because of increased infiltration, ground water production is expected to increase. These conditions are expected to remain unchanged for the next 20 years. There would be no net change in water yield, except for the 602,400 gallon reduction in water consumed by livestock which would increase the total water yield.	Animal grazing affects water yield by altering the vegetation ground cover and the soil compaction. Estimates show that the vegetation ground cover would not significantly change. A decrease in soil compaction would increase infiltration. Livestock consume 300 gallons of water per AUM (Stoddard and Smith, 1955). Under this component, the amount of AUMs provided for livestock would be reduced from 3,412 to 1,404.

ANALYSIS OF IMPACTS ON WATER QUANTITY (concluded)

Impacts	Rationale
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Fall, Winter, Spring) (continued)	
Development would affect 12 acres (one reservoir, 8 miles of pipeline, and four water troughs).	
The reservoir would retain between 1 to 5 acre-feet of water which would reduce the downstream water yield. The 8 miles of pipeline and the four water troughs would not have a significant impact on water quantity.	The water retained in the reservoir would be lost to downstream utilization due to animal consumption, evaporation, or seepage on the site.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Fall, Winter, Spring)	
Eight allotments, 43,217 acres (20 percent of the planning unit).	
The present water yield from these allotments is 1,712 acre-feet per year. Runoff would decrease and infiltration increase to a slight extent. Because of increased infiltration, ground water production is expected to increase. These conditions are expected to remain unchanged for the next 20 years. There would be no net change in water yield except for the 49,200 gallon reduction in water consumed by livestock which would increase the total water yield.	Animal grazing affects water yield by altering the vegetation ground cover and the soil compaction. Estimates show that vegetation ground cover would increase approximately 1 percent which with a decrease in soil compaction would increase infiltration. Livestock consume 300 gallons of water per AUM (Stoddard and Smith, 1955). Under this component, the amount of AUMs provided for livestock would be reduced from 3,544 to 3,380.
Development would affect 10.5 acres (one reservoir, 7 miles of pipeline, and three water troughs).	The water retained in the reservoir would be lost to downstream utilization due to animal consumption, evaporation, or seepage on the site.
The reservoir would retain between 1 to 5 acre-feet of water which would reduce the downstream water yield. The 7 miles of pipeline and 3 water troughs would not have a significant impact on water quantity.	

ANALYSIS OF IMPACTS ON WATER QUALITY

Impacts	Rationale
NO LIVESTOCK GRAZING	
Sixteen allotments, 39,340 acres (19 percent of the planning unit).	
The present water quality would improve on these allotments. These conditions are expected to remain unchanged for the next 20 years.	Surface runoff would decrease and infiltration would increase to a slight extent. Surface runoff contains more sediment, coliform, and other surface pollutants than groundwater. A reduction in surface runoff would improve the water quality.
Development would affect 27 acres (one reservoir and 26 miles of fencing).	
The construction and resulting soil disturbances would cause a slight reduction in water quality on the 27 acres until the vegetation is established in 1 to 3 years. The impact would be slight because the area impacted would be small.	The construction and resulting soil disturbances would cause a slight increase in surface runoff with a temporary increase in pollutants.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Fall, Winter, Spring)	
Seven allotments, 69,300 acres (32 percent of the planning unit).	
The present water quality would improve on these allotments. These conditions are expected to remain unchanged for the next 20 years.	Runoff would decrease and infiltration would increase to a slight extent. Surface runoff contains more sediment, coliform, and other pollutants than ground water. A reduction in surface runoff would improve the overall water quality.
Development would affect 12 acres (one reservoir, 8 miles of pipeline, and four water troughs).	
The construction and resulting soil disturbances would cause a slight degradation in water quality on the 12 acres until the vegetation is established in 1 to 3 years. The impact would be slight because the area impacted would be small.	The construction and resulting soil disturbance would cause a slight increase in surface runoff with a temporary increase in pollutants.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Fall, Winter, Spring)	
Twelve allotments, 61,167 acres (29 percent of the planning unit).	
The present water quality would improve on these allotments. These conditions are expected to remain unchanged for the next 20 years.	Runoff would decrease and infiltration would increase to a slight extent. Surface runoff contains more sediment, coliform, and other pollutants than groundwater. A reduction in runoff would improve the overall water quality.
Development would affect 12 acres (one reservoir, 8 miles of pipeline, and four water troughs).	
The construction and resulting soil disturbances would cause a slight reduction in water quality on the 12 acres until the vegetation is established in 1 to 3 years. The impact would be slight because the area impacted would be small.	The construction and resulting soil disturbance would cause a slight increase in surface runoff with a temporary increase in pollutants.

ANALYSIS OF IMPACTS ON WATER QUALITY (concluded)

Impacts	Rationale
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Fall, Winter, Spring)	
Eight allotments, 43,217 acres (20 percent of the planning unit).	
The present water quality would improve on these allotments. These conditions are expected to remain unchanged for the next 20 years.	Runoff would decrease and infiltration would increase to a slight extent. Surface runoff contains more sediment, coliform, and other pollutants than groundwater. A reduction in runoff would improve the over water quality.
Development would affect 10.5 acres (one reservoir, 7 miles of pipeline, and three water troughs).	
The construction and resulting soil disturbances would cause a slight degradation in water quality on the 10.5 acres until the vegetation is established in 1 to 3 years. The impact would be slight because the area impacted would be small.	The construction and resulting soil disturbance would cause a slight increase in surface runoff with a temporary increase in pollutants.

(3) Assessment

The present water yield is 10,904 acre-feet per year. Estimates indicate that the vegetation ground cover would not significantly change but soil compaction would decrease. Therefore, surface runoff should decrease and infiltration should increase with resultant increase in ground water production, but no significant change in water yield would result except for the reduction in water consumed by livestock which would increase the total water yield. The reservoirs would each retain 1 to 5 acre-feet of water.

The overall water quality would improve slightly under this alternative since runoff would decrease and infiltration would increase. Surface runoff contains more sediment, coliform, and other surface pollutants than ground water. Construction of reservoirs, pipelines, fencing and troughs would lower the water quality slightly until the vegetation is established in 1 to 3 years.

(4) Conclusion

Water quantity would not be significantly changed but runoff would decrease and infiltration and ground water production would increase. Overall water quality would improve slightly due to decreased runoff and increased water infiltration.

c. Impacts on Vegetation

(1) Introduction

This section describes the anticipated impacts which this alternative action would have upon vegetation on public lands in the planning unit. Impacts to vegetation are interrelated with impacts to animal life, livestock grazing, watershed, and visual resources.

Vegetation is divided into the following sub-categories for analysis in this section--types, sub-types, and riparian conditions; vegetation ground cover; key species and vegetation composition; threatened and endangered species; forage production; forage condition; and forage condition trend.

Impacts upon each sub-category of the vegetation resource are analyzed separately, followed by an assessment of the impacts and a conclusion.

(2) Analysis of Impacts

The following tables show the probable impacts on the seven sub-categories of vegetation and the rationale for predicting these impacts.

ANALYSIS OF IMPACTS ON TYPES AND SUBTYPES
(Including Riparian Vegetation and Condition)

Impacts	Rationale
NO LIVESTOCK GRAZING	
Sixteen allotments, 39,343 acres (about 19 percent of the planning unit).	
Presently the vegetation types are: Sagebrush type 5,620 acres 14% Grass type 2,845 acres 7% Pinyon-juniper type 29,369 acres 75% Annual type 778 acres 2% Waste 688 acres 1% Riparian type 43 acres less than 1%	Grazing use under this alternative would be near the present vegetation production but used only by wildlife instead of domestic livestock. Deer and antelope both prefer browse species over grass, therefore grass species are expected to increase because of the reduced competition. The shift from browse to grass is not expected to be great enough to change the vegetation type.
The alternative grazing management or the proposed developments would not cause a change in any of these types. The composition of grass is expected to increase and browse decrease, but not enough to cause a type change.	
The riparian vegetation condition is as follows: 9 acres poor, 11 acres fair, 23 acres good. The 9 acres poor is expected to slowly improve to fair and the 11 acres of fair improve slowly to good within 20 years.	The removal of domestic livestock especially cattle would reduce the physical damage done to stream banks. Wildlife generally do not remain around water like cattle do. Therefore, the use of the riparian vegetation is expected to be much less. This would allow riparian vegetation to maintain or improve its vigor (Bowden, 1979).
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Fall, Winter, Spring)	
Eight allotments, 69,330 acres of public land (about 32 percent of the planning unit).	
Existing vegetation types are: Sagebrush type 65,515 acres 95% Grass type 2,325 acres 3% Pinyon-juniper type 1,359 acres 2% Broad-leaf tree type 131 acres less than 1%	Grazing use by domestic livestock would not be changed. Increases in wildlife are expected. The combination of both do not exceed the available vegetation production but is near it. Therefore, very little change in present conditions are expected and no change in vegetation types.
These types are not expected to change within the next 20 years as a result of alternative grazing practices or the developments.	

ANALYSIS OF IMPACTS ON TYPES AND SUBTYPES (concluded)

Impacts	Rationale
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Fall, Winter, Spring)	
Twelve allotments, about 61,167 acres (29 percent of the planning unit).	
Existing vegetation types are: Sagebrush type 41,490 acres 68% Grass type 5,767 acres 9% Pinyon-juniper type 12,290 acres 20% Broad-leaf tree type 812 acres 1% Annual type 784 acres 1% Riparian type 24 acres less than 1%	Grazing use by domestic livestock would be reduced by 67 percent and wildlife use increased by 191 percent, but overall vegetation use would remain at about the vegetation production level. This would likely cause some changes in vegetation composition but would not change the overall types.
Neither the alternative grazing practices or the expected developments would change the existing types.	
The present condition of the riparian vegetation is good and is expected to continue unchanged.	The riparian vegetation is in good condition under present use. The decreased use by livestock and increased use by wildlife would not result in increased use on the riparian vegetation because wildlife do not stay around water areas as much as domestic livestock.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Fall, Winter, Spring)	
Eight allotments, 43,217 acres (about 20 percent of the planning unit).	
Existing vegetation types are: Sagebrush type 24,056 acres Grass type 14,791 acres Pinyon-juniper type 4,370 acres	Grazing use by domestic livestock would not be changed significantly, while wildlife use would increase. Total vegetation use would remain near the forage production level. This would not change vegetation enough to change types.
These types are not expected to change as a result of the grazing management or developments.	

ANALYSIS OF IMPACTS ON VEGETATION GROUND COVER

Impacts	Rationale
NO LIVESTOCK GRAZING	
Sixteen allotments 39,343 acres (about 18 percent of the planning unit).	
The existing average vegetation ground cover of 12 percent would not change significantly within 20 years except for the Riparian Allotment.	Studies have shown that vegetation ground cover is closely related to grazing intensity. As intensity increases, vegetation ground cover decreases (Parker, 1978). Grazing intensity is proposed to be at or near maximum forage production levels, (moderate intensity) for all allotments of this component except on the Riparian Allotment.
The Riparian Allotment is expected to show a 25 percent increase in vegetation ground cover.	The grazing intensity for the Riparian Allotment is proposed at a level of 46 percent of forage productivity (light intensity). This light intensity is expected to produce an increase in vegetation ground cover.
Possible developments would affect about 27 acres.	
If the 26 miles of fence are constructed, there would be about 26 surface acres disturbed. The disturbance would cause reduction in vegetation ground cover of 10 to 80 percent for a period of 1 to 3 years.	Experience has shown that equipment operation during fence construction disturbs about 1 acre per mile of fence. The disturbance varies from 10 to 80 percent depending on the soil condition and terrain. Experience has also shown that revegetation occurs within 1 to 3 years.
Reservoir construction would cause a reduction of ground cover of up to 100 percent on about 1 acre which would be revegetated within 1 to 10 years.	Experience has shown that about 1 acre of surface is disturbed during construction of a small earthen reservoir. Revegetation occurs within 1 to 10 years depending on the condition of the top soil after construction.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Fall, Winter, Spring)	
Eight allotments, 69,330 acres of public land (about 33 percent of the planning unit).	
The existing average vegetation ground cover of 15 percent would decline about 1 percent within 20 years.	The alternative would allow livestock grazing during periods critical to growth and reproduction at a higher level than is currently being used by livestock. (Livestock use averaged 62 percent of allocation for 1975-1977, or what would be authorized by this alternative). Utilization of vegetation could increase at critical periods by implementing this alternative, and a decline in ground cover could result (Cook, 1971).
Developments would affect about 12 acres.	
Soil surface would be disturbed by construction equipment on about 12 acres and from 10 to 100 percent of the vegetation ground cover would be destroyed. Revegetation would occur within 1 to 10 years.	Experience has shown that during construction of pipelines about 1 1/4 acres of surface per mile is disturbed which reduces vegetation ground cover from 10 to 80 percent for 1 to 3 years, and that during construction of a small earthen reservoir, about 1 acre is disturbed which reduces vegetation ground cover from 10 to 100 percent for 1 to 10 years. Also, less than 1/4 acre is disturbed by trough construction. Similar disturbance is expected here.

ANALYSIS OF IMPACTS ON VEGETATION GROUND COVER (continued)

Impacts	Rationale
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Fall, Winter, (Spring)	
Twelve allotments, about 61,161 acres (29 percent of the planning unit).	
Developments would affect about 12 acres.	Studies have shown that vegetation ground cover is closely related to grazing intensity, as intensity increases, vegetation ground cover decreases (Parker, 1961). Grazing intensity on all 12 allotments under this alternative would be at or near maximum forage production levels (moderate intensity). Therefore, very litte change is expected.
The existing average 20 percent vegetation ground cover is not expected to change significantly within the next 20 years. Soil surface would be disturbed on about 12 acres where equipment during construction would destroy from 10 to 100 percent of the vegetation ground cover. Revegetation would occur within 1 to 10 years.	Experience has shown: 1. That during construction of a pipeline about 1 1/4 acres of surface per mile is disturbed which reduces vegetation ground cover from 10 to 80 percent for a period of 1 to 3 years. 2. That during construction of a small earthen reservoir about 1 acre of surface is disturbed which reduces vegetation ground cover from 10 to 100 percent for a period of 1 to 10 years. 3. That during construction of a water trough less than 1/4 acre of surface is disturbed resulting in reduction of vegetation ground cover from 10 to 100 percent for as long as the trough is functioning. Similar disturbance is expected here.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Fall, Winter, Spring)	
Eight allotments, 43,217 acres of public land (about 20 percent of the planning unit).	
The existing average 19 percent vegetation ground cover would increase to about 20 percent within 20 years. This overall increase would result from improvement of three allotments, Flat Top, King Sheep and Spring Branch. The other allotments would not change to any significant degree.	Studies have shown that vegetation ground cover is closely related to grazing intensity. As intensity increases, vegetation ground cover decreases (Parker 1961). Grazing intensity under this alternative would be at or near the maximum forage production level (moderate intensity) for five allotments. Therefore, very little change is expected in vegetation ground cover for these allotments. Grazing intensity for three allotments under this alternative would be at a level from 9 to 22 percent below maximum forage production, therefore these allotments are expected to increase vegetation ground cover from 4 to 10 percent.

ANALYSIS OF IMPACTS ON VEGETATION GROUND COVER (concluded)

Impacts	Rationale
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Fall, Winter, Spring) (continued)	
Developments would affect about 11 acres. Soil surface would be disturbed on about 11 acres where equipment during construction would destroy from 10 to 100 percent of the ground cover. Revegetation would occur within 1 to 10 years.	Experience has shown: 1. That during construction of a pipeline about 1 1/4 acres of surface per mile is disturbed which reduces vegetation ground cover from 10 to 80 percent for a period of 1 to 3 years. 2. That during construction of a small earthen reservoir about 1 acre of surface is disturbed which reduces vegetation ground cover from 10 to 100 percent for a period of 1 to 10 years. 3. That during construction of a water trough less than 1/4 acre of surface is disturbed resulting in reduction of vegetation ground cover from 10 to 100 percent for as long as the trough is functioning. Similar disturbance is expected here.

ANALYSIS OF IMPACTS ON KEY SPECIES AND VEGETATION COMPOSITION

Impacts	Rationale
NO LIVESTOCK GRAZING	
Sixteen allotments, 39,343 acres (18 percent of public land in the planning unit).	
No appreciable increase in key species is expected.	Because all existing forage production now allocated to livestock would be reallocated to big game (and big game numbers are expected to equal forage allocation within 5 years, there would be no long-term reduction in intensity of vegetation utilization. Any measurable increases in abundance of key species could not be expected.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Eight allotments, 69,330 acres (33 percent of the planning unit).	
Composition of key and desirable species may decline below present levels. The degree of decline is unknown, but key species that are presently only a trace of total vegetation compositon could be eliminated from portions of this component.	The alternative would allow livestock grazing during periods critical to growth and reproduction at a higher level than is currently being used by livestock. (Livestock use averaged 62 percent of allocation for 1975-1977 or what would be authorized by this alternative. Utilization of key species could increase at critical periods by implementing this alternative, and a decline of these species could result (Cook, 1971).
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Fall, Winter, Spring)	
Twelve allotments, 61,167 acres (29 percent of the planning unit.)	
A 200 to 300 percent increase in key species composition is predicted within 20 years by implementing the alternative on these allotments except for Fishlake, and Seven Mile. Currently, key species average 3 percent of total composition. Little or no change in key species would be expected on the Fishlake and Seven Mile allotments.	Present livestock grazing (utilization) of key species on these allotments is estimated to be generally heavy (70 percent to 90 percent). By reducing livestock grazing allocation to the livestock grazing capacity, utlization of key species would be expected to become moderate. Hutchings (1953) found on similar ranges in western Utah that production of black sagebrush, Indian ricegrass, squirreltail, and winterfat increases by an average of 300 percent within 13 years after utilization on these species is reduced from heavy (85 percent) to moderate (60 percent). Similarly, an exclosure on the Terza Flat Allotment that has kept livestock out for 3 years indicates a 250 percent average increase in composition of winterfat, Indian ricegrass, squirreltail, and fourwing saltbush (winterfat showed the highest percent increase). It is expected that key species on these 10 allotments would respond in a like manner as grazing pressure is reduced from heavy to moderate levels. Since livestock grazing and use by wildlife on Fishlake and Seven Mile allotments continues well into spring, a season which is the critical period for growth and reproduction of most key species, increases would be limited. Cook (1971) indicated that utilization exceeding 25 percent during late spring may be too severe for optimum vigor and sustained yield of most range forage species.

ANALYSIS OF IMPACTS ON KEY SPECIES AND VEGETATION COMPOSITION (concluded)

Impacts	Rationale
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Fall, Winter, Spring)	
Eight allotments, 43,217 acres, (20 percent of the planning unit).	
A 200 to 300 percent increase in key species composition is predicted within 20 years by implementing the alternative for the Busenbark, Spring Branch and Teasdale Ranch allotments. Currently, key species average 2 percent of total composition. Little or no change in key species would be expected on the Bicknell Winter, Flat Top, King Sheep, Cedar Grove and Grover allotments.	Present livestock grazing (utilization) of the key species on these allotments is estimated to be generally heavy (70 percent to 90 percent). By reducing livestock grazing allocation to the livestock grazing capacity, utilization of key species would be expected to become moderate. Hutchings (1953) found on similar ranges in western Utah that production of black sagebrush, Indian ricegrass, squirreltail, and winterfat increases by an average of 300 percent within 13 years after utilization on these species is reduced from heavy (85 percent) to moderate (60 percent). Similarly, an exclosure on the Terza Flat Allotment that has kept livestock out for 3 years indicates a 250 percent average increase in compositon of winterfat, Indian ricegrass, squirreltail, and fourwing saltbush (winterfat showed the highest percent increase). It is expected that key species on these allotments would respond in a like manner as grazing pressure is reduced from heavy to moderate levels.
	Since livestock grazing and use by wildlife on Bicknell Winter, Flat Top, King Sheep, Cedar Grove and Grover allotments continues well into spring, a season which is the critical period for growth and reproduction of most key species, increases would be limited. Cook (1971) indicated that utilization exceeding 25 percent during late spring may be too severe for optimum vigor and sustained yield of most range forage species.

ANALYSIS OF IMPACTS ON THREATENED AND ENDANGERED SPECIES

Impacts	Rationale
Forty-four allotments (213,057 acres), entire planning unit.	
The impacts this alternative would have upon the candidate and proposed threatened and endangered plant species in this planning unit are unknown, but it is expected that there would be very little if any impact.	According to BYU herbarium records (Welsh, 1976), two proposed endangered plant species (Federal Register, June 16, 1976) and two candidate threatened plant species (Great Basin Naturalist, Volume 38 No. 1, March 31, 1978); have been collected within the Parker Mountain Planning Unit (see Table 2-16). Since critical habitat for these plant species has not been determined, and the extent of their individual populations is unknown, the entire planning unit is included in this impact sub-category. Any type of vegetation management, including type of grazing and vegetation manipulation, could have some inadvertant effect upon threatened or endangered plant species. Because these species are not well known, the way they respond to various types of vegetation management cannot be determined at this time.

ANALYSIS OF IMPACTS ON FORAGE PRODUCTION

Impacts	Rationale
NO LIVESTOCK GRAZING	
Sixteen allotments, 39,343 acres (18 percent of public land in the planning unit).	
Current forage production on these allotments is 949 AUMs (6 percent of the planning unit's total forage production). It is expected that forage production would not increase over a 20 year period.	Because all existing forage production now allocated to livestock would be reallocated to big game (and big game numbers are expected to equal forage allocation within 5 years), there would be no long-term reduction in intensity of vegetation utilization. There would be no measurable increase in forage production on these allotments.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Fall, Winter Spring)	
Eight allotments, 69,330 acres (33 percent of the planning unit).	
If livestock use increases to levels that would be authorized by the alternative and is maintained, forage production may decline below present levels (7,159 AUMs) within 20 years. The degree of decline is unknown.	The alternative would allow more livestock use than is currently being made on these allotments (BLM, 1978a). Utilization of important forage species could increase on these allotments, and this could result in a decline in forage production within 20 years.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Fall, Winter, Spring)	
Twelve allotments, 61,167 acres (29 percent of the planning unit).	
Little or no increase in forage production is expected above the present 3,362 AUMs within 20 years.	Increases of 200 to 300 percent of desirable forage species are predicted on all these allotments except Seven Mile and Fishlake, by reducing livestock from the current heavy grazing to a moderate level (Hutchings, 1953; BLM, 1979c). However, since the desirable forage species are currently at such low levels (average 2 percent of the vegetation composition), forage production is not expected to increase appreciably. Since livestock grazing and use by wildlife on Seven Mile and Fishlake allotments continues well into spring, a season which is the critical period for growth and reproduction of most key species, increases would be limited. Cook (1971) indicated that utilization exceeding 25 percent during late spring may be too severe for optimum vigor and sustained yield of most range forage sepecies.

ANALYSIS OF IMPACTS ON FORAGE PRODUCTION (concluded)

Impacts	Rationale
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Fall, Winter, Spring)	
Eight allotments, 43,217 acres (20 percent of the planning unit).	
Little or no increase in forage production is expected above the present 4,469 AUMs within 20 years.	Increases of 200 to 300 percent of desirable forage species are predicted for the Busenbark, Spring Branch, and Teasdale Ranch allotments by reducing livestock from the current heavy grazing to a moderate level (Hutchings, 1953; BLM, 1979c). However, since the desirable forage species are currently at such low levels (average 2 percent of the vegetation composition), forage production is not expected to increase appreciably on these three allotments.
	Since livestock grazing and use by wildlife on Bicknell Winter, Flat Top, King Sheep, Cedar Grove and Grover allotments continues well into spring, a season which is the critical period for growth and reproduction of most key forage species, increases would be limited. Cook (1971) indicated that utilization exceeding 25 percent during late spring may be too severe for optimum vigor and sustained yield of most range forage species.

ANALYSIS OF IMPACTS ON FORAGE CONDITION

Impacts	Rationale
NO LIVESTOCK GRAZING	
Sixteen allotments, 39,343 acres (18 percent of public land in the planning unit).	
Forage condition is currently good on 5,523 acres, (14 percent) fair on 20,645 acres, (52 percent) and poor on 13,175 acres, (34 percent) of public land in this component.	Forage condition is dependent upon the relative abundance of key and other desirable plant species in the total vegetation composition.
It is expected that if big game numbers are maintained at levels authorized by this alternative, that current forage condition would not change over a 20-year period.	Because all existing forage production now allocated to livestock would be reallocated to big game (and big game numbers are expected to equal forge allocation within 5 years), there would be no long-term reduction in intensity of vegetation utilization. Therefore, any measureable increases in abundance of key species could not be expected and present forage condition would neither improve nor deteriorate.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Eight allotments, 69,330 acres (33 percent of the planning unit).	
If livestock use increases to levels that would be authorized by the alternative and is maintained, forage condition may decline below present levels within 20 years. The degree of decline is unknown. Present forage condition is: good - 62,832 acres, fair - 6,498 acres.	The alternative would allow more livestock use than is currently being used by livestock on these allotments (BLM, 1978a). Utilization of important forage species could increase on these allotments resulting in a decline in forage condition within 20 years.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Fall, Winter, Spring)	
Twelve allotments, 61,167 acres (29 percent of the planning unit).	
Little or no change in forage condition is expected. Present forage condition is: Good 7,291 acres Fair 40,295 acres Poor 13,581 acres	Increases of 200 to 300 percent of desirable forage species are predicted on all the allotments except for Seven Mile and Fishlake by reducing livestock from the current heavy grazing to a moderate level (Hutchings, 1953; BLM, 1979c). However, since the desirable forage species are currently at such low levels (average 3 percent of the vegetation composition), forage condition is not expected to change on these allotments. Since livestock grazing and use by wildlife on Seven Mile and Fishlake allotments continues well into spring, a season which is the critical period for growth and reproduction of most key species, increases would be limited. Cook (1971) indicated that utilization exceeding 25 percent during late spring may be too severe for optimum vigor and sustained yield of most range forage species subsequently condition is not expected to change.

ANALYSIS OF IMPACTS ON FORAGE CONDITION (concluded)

Impacts	Rationale
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Fall, Winter, Spring)	
Eight allotments, 43,217 acres (20 percent of the planning unit).	
Little or no improvement in forage condition is expected. Present condition is: Good 36,442 acres Fair 4,690 acres Poor 2,085 acres	Increases of 200 to 300 percent of desirable forage species are predicted for the Busenbark, Spring Branch, and Teasdale Ranch allotments by reducing livestock from the current heavy grazing to a moderate level (Hutchings, 1953; BLM, 1979). However, since the desirable forage species are currently at such low levels (average 2 percent of the vegetation composition), forage condition is not expected to improve. Since livestock grazing and use by wildlife on Bicknell Winter, Flat Top, King Sheep, Cedar Grove and Grover allotments continues well into spring, a season which is the critical period for growth and reproduction of most key species, increases would be limited. Cook (1971) indicated that utilization exceeding 25 percent during late spring may be too severe for optimum vigor and sustained yield of most range forage species.

ANALYSIS OF IMPACTS ON FORAGE CONDITION TREND

Impacts	Rationale
NO LIVESTOCK GRAZING	
Sixteen allotments, 39,343 acres, (18 percent of public land in the planning unit).	
Trend in forage conditon on the allotments is down. It is expected that with a few years of normal precipitation forage condition would begin an upward trend with or without implementation of this alternative.	The downward trend in forage condition on these allotments is probably due to lack of precipitation. There has been 6 years of less than average precipitation (1973-1978 NOAA). Also, over allocation of forage has contributed to causing this current trend. Forage production on these allotments is 949 AUMs. Livestock and big game allocation is 1,265 AUMs. Total allocation currently exceeds forage production by 33 percent.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Eight allotments, 69,330 acres (33 percent of the planning unit).	
If livestock use increases to levels that would be authorized by the alternative and is maintained, forage condition trend may continue to decline for 20 years. The degree of decline is unknown.	The current downward trend in forage condition on these allotments is probably due to lack of precipitation. There has been 6 years of less-than-average precipitation (NOAA, 1973 to 1978). The alternative would allow more livestock use than is currently being used by livestock on these allotments (BLM, 1978a). Utilization of important forage species could increase on these allotments resulting in a decline in trend.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Fall, Winter, Spring)	
Twelve allotments, 61,167 acres (29 percent of the planning unit).	
The current downward trend in forage condition is expected to improve initially (with normal precipitation) and continue to improve gradually for 20 years on ten allotments. For Fishlake and Seven Mile allotments trend is expected to improve initially with normal precipitation and become static within 20 years.	The downward trend in forage condition on these allotments is probably due to lack of precipitation. There has been 6 years of less-than-average precipitation (NOAA, 1973 to 1978). It is expected that forage condition trend would improve initially, after a few years of normal precipitation. The increases in key species that are predicted as a result of reduced livestock grazing are expected to continue to improve the trend (Hutchings, 1953; BLM 1979c) on ten allotments. Since livestock grazing would continue during the critical periods in the Fishlake and Seven Mile allotments, trend is expected to become static within 20 years (Cook, 1971).

ANALYSIS OF IMPACTS ON FORAGE CONDITION TREND (concluded)

Impacts	Rationale
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Fall, Winter, Spring)	
Eight allotments, 43,217 acres (20 percent of the planning unit).	
The current downward trend in forage condition is expected to improve initially (with normal precipitation) and continue to improve gradually for 20 years on the Busenbark, Spring Branch, and Teasdale Ranch allotments. For the Bicknell Winter, Flat Top, King Sheep, Cedar Grove, and Grover allotments, trend is expected to improve initially with normal precipitation and become static within 20 years.	The current downward trend in forage condition on all these allotments is probably due to lack of precipition. There has been 6 years of less-than-average precipitation (NOAA, 1973 to 1978). It is expected that forage condition trend would improve initially, after a few years of normal precipitation. The increases in key species that are predicted as a result of reduced livestock grazing are expected to continue to improve the trend on the Busenbark, Spring Branch, and Teasdale Ranch Allotments (Hutchings, 1953; BLM, 1979c). Since livestock grazing would continue during the critical periods on the Bicknell Winter, Flat Top, King Sheep, Cedar Grove and Grover allotments, trend is expected to become static within 20 years (Cook, 1971).

(3) Overall Assessment

Implementation of this alternative would have no measurable affect upon vegetation types or subtypes. Riparian vegetation in poor and fair condition would improve; that in good condition would remain static.

Vegetation ground cover would probably increase about 1 percent on 20 percent of the planning unit and decrease about 1 percent on 32 percent of the planning unit. There would be a 25 percent increase in vegetation ground cover on the 600 acre Riparian allotment, and no change in vegetation ground cover on any of the remaining 48 percent of the planning unit.

On the 82,560 acres (39 percent of the planning unit) there would be little change in key and other desirable plant species since livestock or wildlife grazing would be at forage production levels. On 20 allotments, 61,161 acres (29 percent of the planning unit) implementation of this alternative would allow key species to increase from 200 to 300 percent by reducing forage allocation or reducing utilization (Hutchings, 1953). Current key species composition on these allotments is at present, so low (2 or 3 percent) that even an increase by a factor of three over a 20 year period would be relatively insignificant On 33 percent (69,330 acres) of the planning unit, where grazing would continue as in the past, key plant species may decline and could possibly be eliminated from portions of this component.

On 143,721 acres (67 percent of public land in the planning unit), forage production would not change in 20 years. Continuing current livestock grazing use on 69,330 acres (33 percent of the planning unit) could cause forage production to decline below the present 7,159 AUMs (assuming that actual use would equal present allocation for the next 20 years). The actual drop in forage production cannot be accurately quantified with existing data but would be closely linked to any reduction in composition of key and other desirable range forage plants.

Forage condition is presently good on 112,088 acres, (52 percent of the planning unit), while 72,128 acres are in fair condition, and 28,841 acres are in poor condition. With implementation of this alternative, 69,330 acres could deteriorate in forage condition within 20 years. Forage condition would only deteriorate on those eight allotments where current livestock grazing would not be modified by implementation of this alternative. On the remaining 143,727 acres of the planning unit, forage condition would not change if normal precipitation occurs.

Forage condition trend is down on all 213,057 acres of the planning unit. The downward trend is probably due to lack of precipitation. For the past 6 years, precipitation has been less-than-average (NOAA, 1973-1978). It is expected that forage condition would trend upward over the entire planning unit after a few years of normal precipitation. Overall, implementation of this alternative would contribute to improving forage condition trend on 33 percent of the planning unit. On the remaining 67 percent trend would remain static for the long term.

(4) Conclusion

The alternative would result in a decline in forage condition and the other vegetation sub-categories on 69,330 acres (33 percent of the planning unit). There would be little or no change in forage condition on the other vegetation sub-categories on 143,727 acres (67 percent of the planning unit).

d. Animal Life

(1) Introduction

This section describes the impacts of the maximum constraint alternative on mule deer, elk, antelope, sage grouse, the endangered Utah prairie dog and fish. Analysis indicates that other species of wildlife found in the planning unit would not be significantly impacted by this alternative and they are therefore not discussed in this section.

b. Analysis of Impacts

The following tables show the probable impacts and rationale for predicting these impacts on mule deer, elk, antelope, sage grouse, Utah prairie dog, and trout.

ANALYSIS OF IMPACTS ON MULE DEER

Impacts	Rationale
NO LIVESTOCK GRAZING	
Sixteen allotments, 39,343 acres (19 percent of public land in the planning unit).	
There would be an increase of 502 AUMs for deer for an increase of 562 more deer for the winter range of the component area. However, there would need to be a deer reduction program to remove 26 from the planning unit, seven deer from the Horse Pasture, and 19 deer from the Torrey Town.	Elimination of the livestock grazing would transfer livestock AUMs to deer use, however, production of AUMs in the Horse Pasture and Torrey Town allotments is less than what is currently being used.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Eight allotments, 69,330 acres (32 percent of public land in the planning unit).	
There would be an increase of 279 deer AUMs above current estimated use. This would provide for 267 more deer in the summer and 140 more deer in the winter.	As pointed out in the vegetation section, there is enough production of forage to allow for this increase in present deer numbers.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Spring, Fall, Winter)	
Twelve allotments, 61,167 acres (29 percent of public land in planning unit).	
There would be an increase of 1,115 AUMs for deer scattered over all of the allotments in the component. This would result in 1,248 deer increase on the winter range of this component area.	The improvements in water availability, the 38 percent reduction in livestock AUMs from the apparent livestock use, and the improvement of vegetation would allow for an increase in deer numbers.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Spring, Fall, Winter)	
Eight allotments, 43,217 acres (about 20 percent of public land in the planning unit).	
There would be an increase of 474 AUMs allocated to deer in this area which would be an increase of 76 deer in summer and 657 during winter.	There are presently 208 deer AUMs available in this component and the alternative would allow for a total of 682. The utilization aspect of this component should assure this number of AUMs would be reached.

ANALYSIS OF IMPACTS ON ELK

Impacts	Rationale
NO LIVESTOCK GRAZING	
Sixteen allotments, 39,343 acres (19 percent of public land in the planning unit).	
No impacts.	Elk use has not been verified in this area.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Eight allotments, 69,330 acres (32 percent of public land in the planning unit).	
The alternative would allow an increase of 211 elk AUMs which would provide for 23 additional elk in the Cedar Peak, Co-op, and Cyclone allotments for summer and 60 additional elk for winter in the Smooth Knoll and Hare Lake allotments. No elk AUMs would be provided in the Hector Hollow Allotment which is 2,002 acres or 3 percent of public land in the allotments under this component.	This would provide for an increase of 53 AUMs for elk numbers in the Cedar Peak Allotment and 158 AUMs for the expected increase from the Boulder Mountain elk herd in the Hare Lake and Smooth Knoll allotments. The Co-op and Cyclone Allotments would remain the same. There are no elk in the Hector Hollow Allotment.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Spring, Fall, Winter)	
Twelve allotments, 61,167 acres (29 percent of public land in planning unit). Only Fishlake and Seven Mile allotments are affected.	
The alternative allocation of 106 elk AUMs (80 elk) is no different from the existing situation.	The alternative allocates the same number of elk AUMs as are now being used in the two allotments. Elk are not found in the other ten allotments.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Spring, Fall, Winter)	
Eight allotments, 43,217 acres (about 20 percent of public land in the planning unit). Only the Cedar Grove Allotment is affected.	
This alternative provides 158 AUMs for the existing 60 elk for 5 months.	There are currently 60 elk using this allotment where no AUMs were reserved for any big game during the 1965 adjudication. This alternative would establish an "authorized" AUM figure for the 60 elk that winter in this allotment. Elk use has not been verified in any of the other allotments. The utilization aspect of this component should assure that the AUMs would be met.

ANALYSIS OF IMPACTS ON ANTELOPE

Impacts	Rationale
NO LIVESTOCK GRAZING	
Sixteen allotments, 39,343 acres (19 percent of public land in the planning unit), only the Deleeuw Allotment is involved (3,238 acres).	
No change from the existing antelope situation. The Deleeuw Allotment currently supports 48 wintering antelope (25 AUMs) or about 5 percent of the winter antelope population.	The alternative would allocate the same number of AUMs over the long-term as is presently allocated.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Eight allotments, 69,330 acres (32 percent of public land in the planning unit). All of the allotments except Hector Hollow (2,002 acres) would be involved.	
There would be an increase of 291 AUMs for antelope which would provide for an additional 559 antelope throughout this area.	The alternative would allocate additional AUMs for antelope (291) in all of the allotments except the Hector Hollow Allotment where antelope do not exist.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Spring, Fall, Winter)	
Twelve allotments, 61,167 acres (29 percent of public land in planning unit). All of the allotments except the Bicknell, Lime Kiln, Lyman, Neff Ranch, and Sand Wash allotments would be involved.	
There would be an increased allocation of 195 antelope AUMs above the current 229. This would provide for 440 additional antelope scattered through the Fishlake, Long Hollow, Terza Flat, North Fremont, Past Hollow, and Seven Mile allotments.	Five of the 12 allotments have no antelope within their boundaries. The other seven would provide antelope with 440 AUMs previously allocated to livestock.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Spring, Fall, Winter)	
Eight allotments, 43,217 acres (about 20 percent of public land in the planning unit). The Bicknell Winter, Flat Top, King Sheep, and Cedar Grove allotments would be involved.	
There would be an increase of 152 AUMs (295 antelope for 5 months) in the affected area.	Four of the eight allotments have no antelope within their boundaries. In the other four, antelope would benefit from the alternative by increased available forage, primarily for winter and spring use. The livestock utilization control in this component would insure adequate forage for antelope.

ANALYSIS OF IMPACTS ON SAGE GROUSE

Impacts	Rationale
NO LIVESTOCK GRAZING	
Sixteen allotments, 39,343 acres (19 percent of public land in the planning unit). The Deleeuw and Riparian allotments would be involved.	
Impacts to sage grouse in this component would be beneficial in the Deleeuw Allotment and have an initial beneficial effect in the Riparian Allotment. The amount of benefit is unquantifiable at this time.	Sage grouse are known to occur only in two allotments of this component. No livestock grazing would increase the winter food supply in the Deleeuw Allotment and initially in the Riparian Allotment. The amount of available succulent forage would increase. The long-term effect would be somewhat less as the riparian zone returned to taller more coarse vegetation. This would take 5 to 20 years and would be difficult to quantify.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Eight allotments, 69,330 acres (32 percent of public land in the planning unit). All allotments except the 2,002 acre Hector Hollow Allotment would be involved.	
This alternative would be detrimental to sage grouse, in the seven affected allotments. The detrimental effect is unquantifiable at this time. However, there would be less chicks per brood and less chicks survive to maturity (Jarvis, 1974).	There would be further deterioration of the succulent spring forage because the alternative would have a 29 percent increase in livestock use during a season of use that is detrimental to key plant species and other desireable succulent vegetation. It also allows for a 262 percent increase in big game numbers which could also further deteriorate vegetation needed by sage grouse for survival.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Spring, Fall, Winter)	
Twelve allotments, 61,167 acres (29 percent of public land in planning unit). All allotments except the Bicknell, Lime Kiln, Lyman, Neff Ranch, and Sand Wash allotments would be involved.	
In five of the 12 allotments, there would be no impacts. In the remaining allotments there could be an improvement of sage grouse habitat.	There are no sage grouse in five allotments. The reduction of approximately 21 percent use on spring and winter sage grouse range should reduce direct competition for forage and improve the habitat. The amount of improvement is unquantifiable.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Spring, Fall, Winter)	
Eight allotments, 43,217 acres (about 20 percent of public land in the planning unit). The Bicknell Winter, Flat Top, King Sheep, and Cedar Grove allotments would be involved.	
In four allotments, there would be no impacts. There would be detrimental effects to the sage grouse habitat in the other four allotments. The extent is unknown, but could be quantified with the utilization studies.	There are no sage grouse in four allotments. The 60 percent increase in livestock use on range presently on a downward forage condition trend and at a season of use which reduces the abundance and production of desirable plant species on sage grouse winter and spring range could negate the affect of proposed adjustments of utilization.

ANALYSIS OF IMPACTS ON UTAH PRAIRIE DOG

Impacts	Rationale
NO LIVESTOCK GRAZING	
Sixteen allotments, 39,343 acres (19 percent of public land in the planning unit).	
No impacts.	Prairie dogs are not found in these allotments.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Eight allotments, 69,330 acres (32 percent of public land in the planning unit).	
The alternative would have an adverse effect on the Utah prairie dog. The magnitude is unknown but could prevent further expansion of colonies and/or limit the existing population.	Livestock tend to concentrate in areas of succulent forage which are also preferred by prairie dogs. The possibility of a 29 percent increase in livestock grazing during spring green up period of key and other desireable succulent forage species would result in direct competition for forage between livestock and prairie dogs and could reduce the available food supply needed by prairie dogs during their critical lactating period of May and June (Crocker-Bedford, et al., 1975). The possible 262 percent increase in big game animals could add to this problem but to a much lesser degree as most deer and elk use would increase mainly in the winter range outside the prairie dog colony areas. However, antelope would also utilize the spring forage.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Spring, Fall, Winter)	
Twelve allotments, 61,167 acres (29 percent of public land in planning unit). Only the Lime Kiln Allotment (2,960 acres) would be involved.	
Little if any adverse impacts.	Prairie dogs are found mostly on private land in the Lime Kiln Allotment.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Spring, Fall Winter)	
Eight allotments, 43,217 acres (about 20 percent of public land in the planning unit). The Bicknell Winter, Flat Top, and Cedar Grove allotments would be involved.	
Initially the alternative would have an adverse effect on the Utah prairie dog. The magnitude is unknown but could prevent further expansion of colonies and/or limit the existing population. Over the long-term, this alternative would be beneficial to expansion of Utah prairie dog populations.	The first year the alternative would allow a 47 percent increase in livestock grazing during critical growing seasons for key and other plant species desirable for Utah prairie dogs. There would also be an unknown increase in antelope use which would add to the plant utilization during the critical lactating period for prairie dogs. As the livestock utilization would be controlled and big game animals also brought into balance with the 60 percent utilization of the plant species, there could be a beneficial effect on the plant species which would reverse the detrimental effect on the prairie dog.

ANALYSIS OF IMPACTS ON FISH

Impacts — Rationale

NO LIVESTOCK GRAZING

Sixteen allotments, 39,343 acres (19 percent of public land in the planning unit). Two miles of Pine Creek, 5.63 miles Fremont River, and 0.15 miles Fish Creek would be affected.

Beneficial impacts to 7.78 miles of trout stream. There would be an unquantifiable increase in fish numbers and size. The chart below shows the anticipated impacts to trout habitat.

The curtailment of grazing on these streams would have an immediate and long lasting beneficial effect on the streambanks and water quality of these streams. As cover improved and streambeds cleaned up, there would be increased reproduction and space to provide for more fish. As the stream and streambank improved, there would be a greater supply of food which would increase the limits of growth of the fish (Duff, 1977, 1978.; Mueggler, 1975; Marcuson, 1970; Gunderson, 1968; Platts, 1978; Platts, 1972; Platts and Roundtree, 1972; and Eckert, 1975).

Allotment, and Stream	Miles of Stream	Stream Habitat Condition: Present	Stream Habitat Condition: Predicted in 20 Years
Riparian[a]			
Pine Creek	2.0	Fair	Good
Deleeuw			
Fremont R.	1.0	Fair	Good
Donkey Hill			
Fish Creek	0.15	Poor	Good
River			
Fremont R.	3.63	Good	Good
Hickman			
Fremont R.	1.0	Fair	Good
Total	7.78		

[a] Taken from the King Sheep Allotment for stream bank protection.

CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)

Eight allotments, 69,330 acres (32 percent of public land in the planning unit).

No impacts.

There are no fisheries in this area.

CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Spring, Fall, Winter)

Twelve allotments, 61,167 acres (29 percent of public land in planning unit). Approximately 0.25 miles of Road, or 1 mile of Fremont River and 0.75 miles of Riley Creek would be affected.

These streams would be detrimentally impacted in the same way as pointed out for the proposal, except approximately 0.25 miles of Riley Creek which is inaccessible to livestock. The chart below shows the anticipated impacts to trout habitat.

The grazing of domestic livestock, especially cattle, in a riparian zone is detrimental to trout fisheries. This alternative would change the existing situation only slightly. Streams and streambanks would continue to be over utilized, cave-in, and continue their downward trend.

ANALYSIS OF IMPACTS ON FISH (concluded)

Impacts | Rationale

CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Spring, Fall, Winter) (continued)

Allotment, and Stream	Miles of Stream	Stream Habitat Condition Present	Stream Habitat Condition Predicted in 20 Years
Post Hollow			
Riley Creek	0.75	Fair	Poor
Long Hollow			
Road Creek	0.25	Fair	Poor
North Fremont			
Fremont R.	1.0	Fair	Poor
Total	2.0		

CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Spring, Fall, Winter)

Eight allotments, 43,217 acres (about 20 percent of public land in the planning unit), 0.40 miles of Fish Creek.

This stream would continue to be adversely affected until the utilization aspect of the alternative is applied at which time the situation could reverse somewhat but would remain detrimental. The magnitude is unknown. The chart below shows the anticipated impacts to trout habitat.

Allotment, and Stream	Miles of Stream	Stream Habitat Condition Present	Stream Habitat Condition Predicted in 20 Years
Grover			
Fish Creek	0.15	Poor	Poor
Spring Branch			
Fish Creek	0.25	Poor	Poor
Total	0.40		

The first year after implementation, there could be a greater (65 percent in Spring Branch Allotment and 63 Percent in Grover Allotment) amount of livestock grazing than at present. This could be devastating to the remaining habitat as the utilization aspect of the alternative is applied, the deterioration would slow but as long as livestock (primarily cattle) graze the banks, these would continue to be deteriorated (see Chapter 3 rationale for details), and no improvement would occur.

(3) Assessment

Deer

The alternative provides for 3,497 AUMs for the long-term allocation of vegetation for deer use. This would provide for 343 deer for summer use over the next 20 years and 3,436 for winter use.

Deer numbers are currently increasing throughout the planning unit and would reach the allocated number within the next 3 to 5 years as indicated by the Utah Big Game Handbook (UDWR, 1978). The UDWR policy (1979) is to increase the number of deer in the unit and hunting and harvest seasons are programmed to continue that management. In the alternative, 1,108 AUMs of vegetation would remain unused after livestock and big game use reach the alternative level. There would need to be a deer reduction program in the Horse Pasture and Torrey Town allotments where present deer numbers exceed the production of AUMs.

Elk

The alternative provides for an increased allocation of 211 AUMs for elk winter use to provide for the new elk herd on the Boulder Mountains. Elk numbers are currently increasing in the planning unit, and UDWR policy (1979) is to hold elk numbers at the level for which there is available habitat. This alternative would allocate sufficient elk forage to provide for the 200 existing and 80 additional elk (about 506 AUMs).

Antelope

The alternative provides a vegetation allocation for antelope use of 1,255 AUMs. This would provide for about 1,294 animals which is approximately 300 more animals than are presently on the planning unit. The UDWR policy (UDWR, 1979) is to maintain the herd at the current levels by hunter harvest and animal transplants. New water developments would also improve antelope habitat.

Sage Grouse

There would be beneficial effect in the Fishlake, Loa Winter, Terza Flat, Long Hollow, North Fremont, Post Hollow, Seven Mile, Deleeuw, and Riparian allotments. In the remaining ten allotments, reduction of key and other desirable species in the spring, during the critical brooding period, could adversely affect young sage grouse survival. The amount of increase and decrease in the various aspects of the alternative is unknown but could be significant. The improved water conditions would likely be beneficial to sage grouse.

Endangered Utah Prairie Dog

The key to survivial for this endangered species is to have cool season grasses available during the lactation period and cool season grasses and other succulent vegetation available as soon as the young start leaving their burrows. Livestock grazing during the spring period would result in competition between livestock and prairie dogs for succulent vegetation. This would have an unquantifiable adverse effect on Utah prairie dogs and could prevent further expansion of colonies and/or limit populations.

Fish

The quality of water would probably improve considerably in the no grazing component of this alternative. In the other components, the vegetation ground cover would remain essentially unchanged. Numerous studies show that cattle trampling and concentrating along stream banks would, however, break off overhanging banks and continue to suppress cover and shade along creek banks which would reduce the quality of habitat for fish. The fisheries habitat condition would be expected to change as shown below:

Approximate Miles in Habitat Condition Class

	Good	Fair	Poor
Present	4	6	1
Prediction in 20 years	8	2	1

(4) Conclusions

Big game allocation is summarized below:

		Current Use		Long-Term Allocation	
		Number	AUMs	Number	AUMs
Deer	Summer	109	1,127	343	3,497
	Winter	1,103		3,436	
Antelope					
	Summer	394	617	500	1,255
	Winter	750		1,294	1,255
Elk	Summer	20	295	60	506
	Winter	200		282	

There would be an overall increase in the levels of big game use on the entire unit, however, on two allotments, overuse could occur and existing deer numbers may not be supported by the existing vegetation production.

Sage Grouse

Generally, sage grouse could be adversely affected as vigor of key and desirable plants, and vegetation ground cover may decrease. The magnitude is unknown. In 20 allotments, (76 percent of the planning unit and 66 percent of the total sage grouse habitat in the unit), the nesting success of sage grouse and survival rate of sage grouse chicks would decline and lead to reduction in sage grouse populations.

Overall 66 percent of the sage grouse habitat would deteriorate, 32 percent would remain unchanged, and 2 percent would improve.

Endangered Utah Prairie Dog

Reduction of key and other desirable species in the spring, during the critical lactating period, could adversely affect survival of young prairie dogs.

The survival rate of Utah prairie dog litters could decline which would cause a decrease in prairie dog populations, a reduction in the population growth rate or both. Insufficient data are available to determine whether or not the continued existence of the Utah prairie dog would be jeopardized. A U.S. Fish and Wildlife Service (USFWS) formal biological opinion on this matter will be included in the final environmental statement. A copy of an informal consultation reply from USFWS is included in Chapter 9.

Fish

The size and number of fish in the planning unit fisheries would improve on 7.78 miles where livestock use would be eliminated. The other 2.4 miles of fishery would remain in a deteriorated condition.

e. Archaeological Resources

(1) Introduction

This section analyzes the impacts that this alternative would have on archaeological resources.

(2) Analysis of Impacts

The following table shows the probable impacts and rationale for predicting these impacts on archaeology.

ANALYSIS OF IMPACTS ON ARCHAEOLOGICAL RESOURCES

Impacts	Rationale
ALL COMPONENTS OF THE ALTERNATIVE	
Forty-four allotments, 213,587 acres (all of the planning unit).	
Proposed range developments on 14 allotments would cause ground disturbance on 100 acres.	Experience has shown that even with implementation of design features and required inventories, as described as part of the proposal, accidental loss of archaeological remains could occur.
Twenty-three sites have been recorded on seven of the allotments included in this alternative. Little or no archaeological inventory has been done in the remaining allotments, but additional sites are assumed to exist in the area.	
The proposed range develpments involve ground-disturbing actions resulting from the construction and use of pipelines, water troughs, reservoirs, and fences. The specific causes of adverse impacts to archaeological resources are the ground-disturbing actions during construction and modification, livestock trampling around water troughs, and inundation due to reservoirs. Even with the implementation of proposed mitigation, ground-disturbing actions could inadvertently damage or destroy archaeological resources resulting in a loss of scientific and educational information.	

(3) Overall Assessment

Twenty-three sites have been recorded on seven allotments within the planning unit. Limited archaeological resource inventory has been done on the remaining allotments, but additional sites are assumed to exist in the area. Even with the implementation of proposed mitigation, ground-disturbing actions could inadvertently damage or destroy cultural resources on approximately 100 acres, resulting in a loss of scientific and educational information. These ground-disturbing actions involve construction activities, livestock trampling around water sources, and inundation of areas due to reservoirs.

The intensive archaeological resource inventory required by the proposed mitigation would be a beneficial impact to the resource as it would result in the recordation and documentation of previously unknown areas and sites.

(4) Conclusion

Little, if any, loss to archaeological resources would occur. Some beneficial effects would be realized as archaeological materials and sites may be found as a result of mandatory surveys prior to implementing range developments.

f. Visual Resources

(1) Introduction

This section describes the impact the Maximum Constraints alternative would have on visual resources (as defined in Visual Resource Management Class areas) within the Parker Mountain Planning Unit.

(2) Analysis of Impacts

The following table shows the possible impacts and rationale for projecting these impacts to visual resources.

ANALYSIS OF IMPACTS ON VISUAL RESOURCES

Impacts	Rationale
Portions of all four components would be affected including the following 22 allotments: Deleeuw, Hickman, Miner's Mountain, Riparian, Torrey Town, River, Bicknell Spring, Cedar Peak, Hare Lake, Smooth Knoll, Cyclone Co-op, Co-op, Cyclone, Loa Winter, Long Hollow, Terza Flat, Post Hollow, Seven Mile, Bicknell Winter, Flat Top, King Sheep and Cedar Grove. This includes 184,075 acres or 97 percent of the planning unit.	
Two miles of fencing in the Hickman and River allotments would be located in VRM Class II areas. The visual modification that would occur may not always be compatible with management objectives for VRM Class II areas over the short term, but would probably be compatible with VRM Class II management objectives over the long term.	Because BLM would have no control over vegetation and ground disturbance and the presence of structures resulting from construction of fencing, the resulting visual modification could in some cases exceed acceptible landscape feature modification for VRM Class II areas over the short-term, but would probably not exceed acceptable landscape feature modification for VRM Class II areas over the long term. See Appendix III-2 for a discussion of how vision impacts are determined.
All other range developments would be located in VRM Class III and IV areas. In all cases, the visual modification that would occur would be compatible with the management objective for the VRM Class area in which it would be located.	Vegetation and ground disturbance and/or the presence of structures resulting from the modification of 30 reservoirs and the construction of four reservoirs, 23 miles of pipeline, 31 miles of fencing, and 11 water troughs would cause a visual modification that would not exceed acceptable landscape feature modification for VRM Class III and IV areas. See Appendix III-2 for a discussion of how vision impacts are determined.

(3) Assessment

Range developments would be the source of impact to the visual resource. Vegetation and ground disturbance or the presence of structures resulting from the modification of 30 reservoirs, construction of four reservoirs, 23 miles of pipeline, 33 miles of fencing, and 11 water troughs would cause a visual modification in the landscape.

Two miles of fencing in the Hickman and River allotments would be located in VRM Class II areas. Because the BLM would have no control over fence construction, visual modification from fence construction may not always be compatible with VRM Class II management objectives over the short term, but would probably be compatible with VRM Class II management objectives over the long term.

All other range developments would be located in VRM Class III and IV areas. In all cases the visual modification would be compatible with the management objective for the VRM Class area in which it would occur.

(4) Conclusion

Because the BLM would have no control over fence construction, the visual modification from construction of two miles of fencing in VRM Class II areas within the Hickman and River allotments may not always be compatible with VRM Class II management objectives over the short term, but would probably be compatible with VRM Class II management objectives over the long term. In all other cases, visual modification from proposed range developments would be compatible with VRM management objectives.

g. Recreation

(1) Introduction

This section describes the anticipated impacts the Maximum Constraints Alternative would have on hunting and fishing opportunities (i.e. quality and number of deer, elk, antelope and sage grouse hunter days, and trout fisherman days) presently provided by the Parker Mountain Planning Unit.

(2) Analysis of Impacts

The following table shows the anticipated changes and the rationale for predicting these changes that would occur to hunting and fishing opportunities.

ANALYSIS OF IMPACTS ON RECREATION

Impacts	Rationale
DEER HUNTING	
Entire planning unit, 39 allotments (213,057 acres).	
With the present hunter success ratio, the potential increase in deer numbers would provide for 26,485 additional hunter days initially and over the long term above the 12,701 hunter days presently provided by the planning unit.	Hunting demand for deer is high. Historically in the area, any increase in deer has resulted in an increase in hunter success, attracting more hunters to the area and resulting in an increase in hunter days (UDWR, 1978). The Maximum Constraints Alternative would allocate 2,350 additional AUMs for deer initially and over the long term above the current estimated use resulting in a potential increase in deer initially and over the long term.
ANTELOPE HUNTING	
All four components would be affected. The following 19 allotments would be involved: Bicknell Spring, Cedar Peak, Hare Lake, Smooth Knoll, Bicknell Winter, Flat Top, King Sheep, Cedar Grove, Cyclone Co-op, Co-op, Cyclone, Fishlake, Post Hollow, Seven Mile, Loa Winter, Deleeuw, Long Hollow, Terza Flat, and North Fremont. This would include 165,365 acres (78 percent) of the planning unit.	
With the present hunter success ratio, the potential increase in antelope numbers would provide for 121 additional hunter days initially and over the long term above the 117 hunter days presently provided by the planning unit.	Hunting demand for antelope is high. Historically in the area, any increase in antelope has resulted in an increase in available hunting permits and hunter days (UDWR, 1978). The Maximum Constraints Alternative would allocate 638 additional AUMs for antelope initially and over the long term above the current estimated use resulting in a potential increase in antelope initially and over the long term.
ELK HUNTING	
All components except No Livestock Grazing would be affected. The following 10 allotments would be involved: Bicknell Spring, Cedar Peak, Hare Lake, Smooth Knoll, Cedar Grove, Cyclone Co-op, Co-op, Cyclone, Fishlake, and Seven Mile. This would include 103,122 acres (48 percent of the planning unit).	
With the present hunter success ratio, the potential increase in elk numbers would provide for 476 additional hunter days initially and over the long term from the 911 hunter days presently provided by the planning unit.	Hunting demand for elk is high. Historically in the area any increase in elk has resulted in an increase in available hunting permits and hunter days (UDWR, 1978). The Maximum Constraints Alternative would allocate 154 additional AUMs for elk initially and over the long term above the current estimated use resulting in a potential increase in elk initially and over the long term.
SAGE GROUSE HUNTING	
Portions of all four components would be affected, including the following 20 allotments: Deleeuw, Riparian, Bicknell Spring, Cedar Peak, Hare Lake, Smooth Knoll, Cyclone Co-op, Cyclone, Co-op, Fishlake, Post Hollow, North Fremont, Loa Winter, Long Hollow, Terza Flat, Seven Mile, Bicknell Winter, Flat Top, King Sheep, and Cedar Grove. This would include 162,845 acres (76 percent of the planning unit).	

ANALYSIS OF IMPACTS ON RECREATION (concluded)

Impacts	Rationale
SAGE GROUSE HUNTING (continued)	
Overall, this alternative would result in an unquantified decrease in quality and number of hunter days from the 1,119 hunter days presently provided by the Parker Mountain Planning Unit.	Hunting demand for sage grouse is high. Historically in the area, any decrease in sage grouse has resulted in a decrease in hunter success, attracting less hunters to the area and resulting in a decrease in hunter days (UDWR, 1976). The Maximum Constraints Alternative would result in a decrease in sage grouse numbers in the planning unit.
TROUT FISHING	
The CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter) component would not be affected. The following 11 allotments of the remaining three components would be affected: Hickman, River, Loa Winter, Long Hollow, North Fremont, Post Hollow, Deleeuw, King Sheep, Grover, Donkey Hill and Spring Branch.	
The Maximum Constraints Alternative would result in an unquantified increase in quality and number of fisherman days provided by Pine Creek and the Fremont Riverand an unquantified decrease in quality and number of fisherman days provided by Riley Creek, Road Creek, and Fish Creek. There would be no impact to fishing opportunities presently provided by Mill Meadow Reservoir. Overall this alternative would provide an unquantified increase in the 3,000 fisherman days presently provided by the planning unit.	Any increase in trout production would result in an increase in fisherman success, attracting more fishermen to the area, resulting in an increase in fisherman days. Any decrease in trout production would result in the opposite effect. The Maximum Constraints Alternative would result in an unquantified increase in trout production in Pine Creek and the Fremont River. This alternative would continue the current decline in all other fisheries, except Mill Meadow Reservoir which would not be affected.

(3) Assessment

The basis of impact on recreation would include any change in management or allocation that would alter numbers of deer, antelope, elk, and sage grouse available for hunting and trout available for fishing.

The analysis assumes that with present numbers of game and fish, the planning unit is providing a certain amount of hunter-fisherman success, which results in the present number of hunter-fisherman days. Hunting and fishing demand is high. With any increase or decrease in game and fish numbers, the planning unit would provide for a corresponding increase or decrease in hunter-fisherman success and days.

With the present hunter success ratio, the potential increase in deer numbers resulting from the change in allocation would provide for 26,485 additional deer hunter days initially and over the long term. The planning unit now provides 12,701 hunter days.

With the present hunter success ratio, the potential increase in antelope numbers resulting from the change in allocation would provide for 121 additional hunter days initially and over the long term. One hundred and seventeen hunter days are presently provided by the planning unit.

With the present hunter success ratio, the potential increase in elk numbers resulting from the proposed change in allocation would provide for 476 additional elk hunter days initially and over the long term. The unit now provides 911 hunter days.

The potential unquantified decrease in sage grouse numbers would result in an unquantified decrease in hunting success and resulting hunter days below the 1,119 hunter days presently provided by the planning unit.

The potential unquantified increase in trout production would result in an unquantified increase in fisherman days provided by the Fremont River and Pine Creek. There would be a continued decline in the quality and number of fisherman days provided by Riley Creek, Road Creek, and Fish Creek. There would be no impact to fishing opportunities provided by Mill Meadow Reservoir. Overall, the Maximum Constraints Alternative would provide an unquantified increase in the 3,000 fisherman days presently provided by the planning unit.

(4) Conclusion

The Maximum Constraints Alternative would result in: 1) 26,485 additional deer hunter days provided initially and over the long term (12,701 hunter days presently provided); 2) 121 additional antelope hunter days initially and over the long term (117 hunter days presently provided); 3) 476 additional elk hunter days initially and over the long term (911 hunter days presently provided); 4) a decrease in sage grouse hunting success and resultant hunter days (1,119 hunter days presently provided); 5) an unquantified increase in fisherman days (3,000 fisherman days presently provided).

h. Impacts on Livestock Grazing

(1) Introduction

This section describes the anticipated impacts the alternative would have on livestock grazing. Major impacts would result from loss of AUMs and could require certain operators to purchase supplementary feed for their livestock or alter their operation.

(2) Analysis of Impacts

The following table shows the probable impacts on livestock grazing and rationale for projecting these impacts.

ANALYSIS OF IMPACTS ON LIVESTOCK GRAZING

Impacts	Rationale
NO LIVESTOCK GRAZING	
Sixteen allotments, 39,343 acres (18 percent of the planning unit).	
There would be no impact to livestock grazing within 20 years by implementing the alternative on three allotments (875 acres).	Livestock have not been licensed to graze Wildlife, Tanner, Dez Hickman allotments since before 1970. This situation would continue.
Eliminating livestock grazing on 13 allotments would mean that the 23 livestock operators may need to obtain additional feed for their livestock or alter their operation.	Experience has shown that livestock operators in this area are more likely to obtain additional feed from other sources to continue their yearly operation rather than sell. This probably results from the users' strong historical ties to the livestock industry and the geographic area.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	
Eight allotments, 69,330 acres (33 percent of the planning unit).	
This component would involve 53 livestock operators. There may be no impact to livestock grazing within 20 years by implementing the proposal; however, grazing for the past several years has been at approximately 78 percent of allocation, so it is possible that actual grazing use could increase by 22 percent.	The alternative is to allow livestock grazing at 100 percent of current allocation. Actual grazing use could increase by 22 percent; but there may be some factor, currently unidentified, that is holding the grazing at current levels. Therefore, livestock grazing may continue as it has the past several years.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Fall, Winter, Spring)	
Twelve allotments, 61,167 acres (29 percent of the planning unit).	
The reduction of livestock grazing by approximately 57 percent for 20 years would mean the 49 livestock operators may need to obtain additional feed for their livestock.	Experience has shown that livestock operators in this area are more likely to obtain additional feed from other sources to continue their yearly operations rather than sell. This probably results from the users' strong historical ties to the livestock industry and the geographic area.
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Fall, Winter, Spring)	
Three allotments, 2,973 acres (One percent of the planning unit).	
The reduction of livestock grazing by an average of 49 percent for 20 years would mean the 6 livestock operators may need to obtain additional feed for their livestock.	Experience has shown that livestock operators in this area are more likely to obtain additional feed from other sources to continue their yearly operations rather than sell. This probably results from the users' strong historical ties to the livestock industry and the geographic area.
Five allotments (40,244 acres 19 percent of the planning unit). Little or no change in livestock grazing is expected for the 31 livestock operators in these allotments.	The alternative would allow an average of 98 percent of the current livestock grazing allocation. This would mean little change in the livestock operations.

(3) Assessment

Livestock grazing would be eliminated from 16 allotments involving 23 livestock operators. There may be an increase in livestock grazing on eight allotments for 53 livestock operators. Fifty-five livestock operators on 15 allotments would have livestock grazing reduced by approximately 50 percent. The changes in grazing levels would necessitate changes in current livestock operations and would directly impact economics and vegetation.

The number of livestock operators is not additive since almost one-half use two or more allotments within the planning unit.

(4) Conclusions

The alternative would reduce livestock grazing for 66 of the 99 operators of the planning unit. Livestock grazing would be eliminated from allotments involving 23 of these operators.

The 66 livestock operators that would be affected by the alternative would likely obtain the needed feed or alter their operation in order to continue their annual livestock operation.

i. Wilderness

(1) Introduction

This section describes the anticipated impacts that the Maximum Constraints Alternative would have on wilderness values (i.e. on roadless inventory units presently undergoing review) within the Parker Mountain Planning Unit.

(2) Analysis of Impacts

The following table shows the possible impacts and rationale for predicting impacts to wilderness values.

ANALYSIS OF IMPACTS ON WILDERNESS

Impacts	Rationale
Three of the four components of the Maximum Constraints Alternative would be affected. These include: Continue Existing Continuous-Seasonal Grazing (Spring, Fall, Winter), Continue With Continuous-Seasonal Grazing With Adjustment Of Grazing Allocation (Spring, Fall, Winter), and Continue With Continuous-Seasonal Grazing Adjusted By Utilization (Spring, Fall, Winter). Within these components, portions of the following eleven allotments would be involved: Bicknell Spring, Hare Lake, Smooth Knoll, Cyclone Co-op, Co-op, Loa Winter, Long Hollow, Terza Flat, Bicknell Winter, Flat Top, and Cedar Grove. The area involved includes approximately 71,185 acres or 33 percent of the planning unit.	
No impairment of wilderness suitability from proposed range developments would occur in the eleven roadless inventory units presently undergoing wilderness review.	New range developments (including two reservoirs, eight miles of pipeline, six miles of fencing and four water troughs) would be located in 71,185 acres of roadless units undergoin wilderness review. The developments would be man-made intrusions that would detract from naturalness and could affect the suitability of an area for Congressional wilderness designation. Easily removable or visually unobtrusive range developments such as fences, water troughs, and pipelines would probably not impair wilderness suitability. Permanent, visually obvious range developments such as large reservoirs could impair wilderness suitability. Any range development determined to impair wilderness suitability would not be authorized within a roadless inventory unit undergoing wilderness review (Draft Interim Management Policy and Guidelines for wilderness Study Areas, 1979).

(3) Assessment

Of the range developments proposed under this alternative, two reservoirs, 8 miles of pipeline, 6 miles of fencing, and four water troughs would be located within 71,185 acres of roadless inventory units undergoing wilderness review. BLM policy and regulations prohibit new range developments that would impair a roadless inventory unit's suitability for Wilderness designation while the unit is undergoing wilderness review. Permanent, obvious developments which would affect an area's naturalness would affect its suitability for designation and would not be authorized unless BLM first determines that the area lacks wilderness character. Any areas that BLM determined to have wilderness character would require congressional action before developments affecting wilderness suitability could be authorized. No developments which would impair wilderness suitability would be authorized within the roadless units until they are released from the wilderness review process.

(4) Conclusion

The Maximum Constraints Alternative would not adversely affect the wilderness designation suitability within the planning unit.

j. Impacts to Economics

(1) Introduction

This section identifies and quantifies the probable economic impacts of the Maximum Constraints Alternative action which reduces the number of AUMs alloted to livestock from 11,180 under the proposed action to 9,573. However, this also represents an increase of 1,288 AUMs or 15.5 percent from the existing livestock use of 8,285 AUMs.

(2) Analysis of Impacts

The following tables show the probable impacts and rationale for projected impacts on income and wealth. Impacts to income are analyzed through two scenarios: (1) changing herd size and, (2) changing feed purchased as necessary to maintain present herd size. It also includes the impact of this action on changes in the regional economy, and impacts from hunting big game animals. It does not, however, indicate the wide differences in impacts that may occur to individual operators.

ANALYSIS OF IMPACTS OF "HERD CHANGE" ON RANCH INCOME

Impacts

Probable impacts and Explanation:

a. Operator Impacts: change in dollars per AU

	Size of Operation		
	Small	Medium	Large
Cash Receipts	$-16.49	$+67.19	$-3.83
Cash Expenses	- 7.03	+18.05	-1.24
Net Returns	- 9.46	+49.14	- 2.59
Net Returns per Ranch	$-574	$+5,143	$-684
Change in wealth positions:	$-90	$+490	$-90

b. Local Economic Impacts

	Direct	Indirect	Total
Output	$33,696	$41,120	$74,816
Earnings	9,211	16,376	25,587

c. Public Sector Impacts

	State
Individual Income Tax	$1,561
Sales Tax	880
	Local
Sales Tax	$168
Property Tax	160

Rationale

While this alternative would cut the number of AUMs alloted to livestock, it is also expected to increase livestock use on the planning unit by 1,288 AUMs (9,573 AUMs proposed use - 8,285 present use = 1,288).

This alternative would adversely affect some operators while others would be benefited. It was determined that the average medium sized operations would receive a 22 AUM gain while the average small and large operators would lose 4 AUMs.

This would allow the medium operators to increase their cash receipts, cash expenses, and net income.

The impacts associated with the "herd change" scenario affect both output and earnings in the livestock sector. Direct output of the range livestock sector would increase by $33,696 which would result in a total output change of $74,816 in all economic sectors.

Total county earnings would increase by $25,587. Of that total, $9,211 would accrue directly to the range livestock sector and the remainder, $16,376 would be received indirectly by other sectors in the region.

Using a sales tax/earnings ratio and an individual state income tax/earning ratio, public sector impacts were identified. Total state sales tax collections are estimated to increase by $880 and $168 would accrue to local government units. In addition, total state individual income tax collections are estimated to increase by $1,561.

The wealth changes for the operators was based on the change in AUMs received by the average operation in each size group. The average value per AUM for the area is $22.50 (Bagley, 1979). In the aggregate this alternative would increase livestock use from the present situation. This is assumed to prevent the loss of about $28,980 in capital value to area operations.

ANALYSIS OF IMPACTS OF "FEED CHANGE" ON RANCH INCOME

Impacts

a. Operator Impacts: Change in Dollars per AU

	Size of Operation		
	Small	Medium	Large
Cash Receipts	--	--	--
Cash Expenses	$+0.17	$ - 7.41	$+1.25
Net Income	-0.17	+ 7.41	-1.25
Net Returns Per Ranch	$-60	$+776	$-320
Change in Wealth Position:	$-60	$+490	$-60

b. Local Economic Impacts

Change in total earnings of range livestock sector	$+19,960

Other Impacts

Change in Hay Purchases	$-28,600
Change in Government Fees	+2,349
Change in non-fee grazing costs	+8,580
Change in feeding costs	-2,288

c. Public Sector Impacts

	State
Income Tax	$+1,218
Sales Tax	+686

	Local
Sales Tax	$ +131

Rationale

Due to the distribution of reductions and increased use of AUMs under this alternative, only the medium sized operations would show a reduction in cash expenses and increase in net income. Cash receipts would not change because herd size remains constant under this scenario.

The "feed change" scenario would affect only the level of earnings, not output levels. The structure of the input-output model is changed to reflect the changes in the "range livestock" sector. Because of greater efficiency and increased use of AUMs in "range livestock" operations, earnings would increase. This reflects the importance of the increased use of available AUMs on the planning unit by the medium operations relative to the reduced allocation to small and large operators. This is also apparent under "Other Impacts" to the local economy.

The increased level of use from the present situation would prevent the loss of 1,288 AUMs. This use would prevent the loss of permit values of about $28,950 (Based on a value of $22.50 per AUM) if the BLM were to revoke them for non-use.

ANALYSIS OF IMPACTS ON INCOME FROM HUNTING

Impacts	Rationale
Income from Big Game Hunting	
State and Local:	
Expenditures from big game hunting could increase from the present estimated $373,390 by about $694,700 to $1,068,000. This would represent a 281 percent increase.	These figures are based on the number of hunter days projected in the recreation section of this alternative. Hunter-day and multiplier values were obtained from the Parker Mountain Planning Documents, 1978 and are as follows:
This would mean an estimated net income (direct and indirect) of $469,970 from big game hunting on the planning unit.	

Elk hunter-day	$54.00
Deer hunter-day	25.00
Antelope hunter-day	57.00
Direct and indirect income multiplier	0.44

(3) Assessment

The "feed change" scenario would reduce cash expenses per AU with no effect on cash receipts for medium size operators (a decrease of $7.41 per AU or 3.8 percent). The effect on net income would be more significant--an increase of $7.41 per AU. This represents an increase of 17.0 percent. Net ranch income would increase to $5,330.

For both the small and large operators, the effect of this alternative would be a reduction in net income per AU due to increased cash expenses. In the case of the small operator, this alternative is projected to decrease net income per AU from $70.35 to $70.18 a decrease of 0.02 percent. For large operators, net income per AU is projected to decrease from $56.43 to $55.18, a decrease of 2.2 percent.

The effects of the "herd change" scenario on the medium size operations would be quite significant. Net income per AU is projected to increase 188 percent to $92.65. The effects on large operators would be a net income per AU decrease from $56.43 to $53.84 a reduction of 4.6 percent. Small operators would experience a decrease in net income per AU of 13.4 percent.

Under BLM regulations, livestock operators can lose AUMs from permits after 3 consecutive years of non-use. This alternative would therefore likely result in an increase over the current level of use. This would prevent the loss of 1,288 AUMs and permit values of more than $28,980.

It is presently estimated that big game hunting supported by the Parker Mountain Planning Unit accounts for about $376,800.00 of expenditures and $165,800.00 of net income to the state and local economies. With the implementation of this alternative, hunting expenditures could be approximately $1,068,000, or about 288 percent more than at present.

(4) Conclusion

The result of the alternative action under the "feed change" scenario would be an increase in the range livestock sector earnings of $19,960. Under the "herd change" scenario, output and earnings in the livestock sector would increase by $33,696 and $9,211 respectively. Secondary impacts would include an output increase in other industries of $41,120 and an earnings increase of $16,376. A major impact of this change in allocation and use would be a total increase in the wealth position of all livestock operators that is estimated to be approximately $28,980.

Impacts on livestock operators are summarized as follows: under the "herd change" scenario, the net returns per ranch would be down $574 (-13 percent) for small operators, up $5,143 (+113 percent) for medium operators, and down $684 (-5 percent) for large operators. Under the "feed change" scenario, net returns per operator would be down $60, (-1 percent), up $776 (+17 percent), and down $330 (-2 percent) for small, medium, and large-scale operators respectively.

Public sector impacts under the "herd change" situation include a sales and income tax increase of $2,441 at the state level. Local sales and property taxes are projected to increase by $328. Under the "feed change" scenario, state sales and income tax collections would increase by $1,904 and local sales tax collections would be higher by $131.

The increased wildlife AUMs could mean an additional $469,970 of net income to the state and local economy.

k. Sociology

(1) Introduction

This section describes the anticipated impacts on social conditions. Only attitudes and expectations would be affected.

(2) Analysis of Impacts

The following table shows the probable impacts and rationale for projecting the impacts on attitudes and expectations.

ANALYSIS OF IMPACTS ON SOCIOLOGY

Impacts	Rationale
People in all of Wayne County and in the Grass Valley portions of Sevier and Piute counties would be affected.	
The reduction of livestock forage from 12,997 AUMs to 9,573 AUMs (26 percent) would be resented. Even though a grazing level 116 percent above the actual use of the past three or four years is proposed, this would have no redeeming values in the livestock operator's opinion.	Past experience has shown that downward adjustments in grazing allocation causes ill feelings against the government among not only livestockmen, but other residents, including the youth.
The proposal to increase wildlife use from 2,039 AUMs to 5,258 AUMs (139 percent) would indicate to the local residents that livestock are being replaced.	
The implementation of the allotment management plans and change in forage allocation would be perceived as additional government intervention; it would be felt that outside influences are dictating local programs. Litigation against BLM is likely.	

(3) Assessment

The alternative would decrease grazing allocation by 26 percent and it would be resented by the livestockmen, most other residents of Wayne and the other affected parts of Sevier and Piute counties.

Locally, the maximum constraint in BLM livestock grazing would be seen as yet another instance of decisionmaking by distant authorities who fail to understand the effects on local residents. Impacts would likely include intensification of negative attitudes toward "big government", along with some efforts to gain agricultural aid to ranchers. This would take the form of lobbying activities through the Cattlemen's Association, or direct contact with elected representation. Litigation against the government is likely.

(4) Conclusion

Overall, the social impacts would be unquantifiable. To some extent, the proposal would initially contribute to an already existing alienation and frustration with government. The perception of constrained local control over the community's future would persist and resentment may intensify among long-time residents.

D. CONTINUE EXISTING MANAGEMENT WITH A 50 PERCENT REDUCTION FROM THE PROPOSED LIVESTOCK ALLOCATION

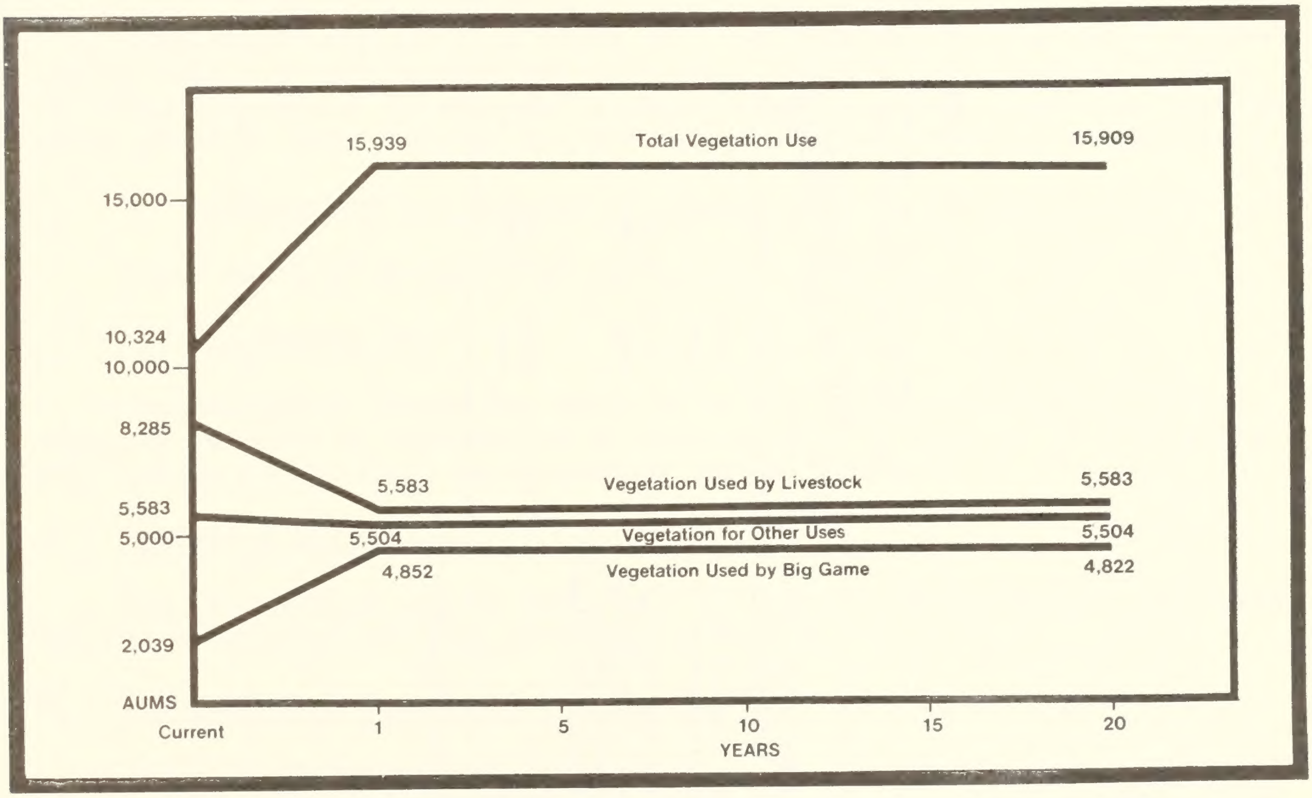
1. Description of the Alternative

a. Purpose

This alternative would substantially reduce livestock use. Sufficient vegetation would be allocated to enhance wildlife habitat, visual resources, recreation, and watershed protection. The allocations in this alternative were developed by allocating livestock 50 percent of the initial level of the proposed livestock use. If sufficient AUMs were available, wildlife was allocated the highest level of requested use in either the Unit Resource Analyses or the proposed action. The remaining vegetation production was allocated to other uses. Overall, 35 percent of the vegetation production on public lands in the planning unit would be allocated to livestock, 30 percent to wildlife, and 35 percent for other uses.

b. Components of the Alternative Action

This alternative is divided into two components. A summary of the components is given on Table 8-5 and the allotment listing for each is given in Appendix VIII-3. The existing and alternative levels of vegetation use are:



EXISTING AND ALTERNATIVE (50% REDUCTION FROM THE PROPOSED LIVESTOCK ALLOCATION) VEGETATION USE

TABLE 8-5

Summary of Existing Vegetation Use and Alternate Allocation
for a 50 Percent Reduction From the Proposed Livestock Allocation

Alternative Action Component	Existing Livestock and Wildlife Grazing Situation						Alternate Allocation (AUMs)		
	Vegetation Production AUMs	Present Livestock Use				Est. Current Wildlife Use (AUMs)			
		Kinds	Number	AUMs Pref.	Current Use AUMs		Livestock	Wildlife	Other Uses
No Livestock Grazing (3 allotments)	30	cattle sheep	0 0	0	0	18	0	30	0
Continue Existing Continuous-Seasonal Grazing (Spring, Fall Winter) (40 Allotments)	15,909	cattle sheep	4,180 17,882	12,997	8,285	2,021	5,583	4,822	5,504
Total	15,939	cattle sheep	4,180 17,882	12,997	8,285	2,039	5,583	4,852	5,504

Source: Appendix VIII-D.

The two components are: 1) no livestock grazing and 2) continue existing continuous seasonal grazing (spring, fall, winter). Any increases in vegetation production which may result from reduced livestock grazing would be allocated to enhancement of other resources.

(1) No Livestock Grazing

Three allotments comprising 875 acres (less than 1 percent of the public land in the planning unit) are included in this component. All of the vegetation production on these allotments (30 AUMs) would be allocated to wildlife.

(2) Continue Existing Continuous-Seasonal Grazing (Spring, Fall, Winter)

The present continuous-seasonal grazing would continue on 40 allotments with a 50 percent reduction from the proposed action initial livestock allocation. Current actual livestock use would continue or increase on seven allotments comprised of 27,030 acres or 13 percent of the public lands in the planning unit (Appendix VIII-3). A total of 5,583 AUMs would be allocated for livestock, 4,852 for wildlife, and 5,504 for other uses. Eleven existing AMPs would be revised and 29 new AMPs prepared.

2. Support Requirements

a. Labor (Work-Months) and Development Costs

Preparation and revision of 40 AMPs for this alternative would require approximately 80 work-months and would cost the BLM approximately 72,000 dollars. The annual operational and maintenance costs for existing developments would be about $40,000 for BLM and $4,500 for livestock operators.

b. Administration, Control of Unauthorized Use and Monitoring

These would be as described in Chapter 1.

c. Implementation

Implementation procedures would be as described in Chapter 1. This alternative would be implemented by decision within one year following the publication of the final environmental impact statement.

3. Operation and Maintenance Considerations

The standard procedures described in Chapter 1 would apply to operation and maintenance of existing developments by BLM.

4. Environmental Impacts of the Alternative

Analysis indicates that there would be no significant impacts on climate, air quality, geology, topography, paleontological resources, archaeological resources, historical resources, visual resources, and wilderness values. Therefore these resources are not discussed further in this alternative. Other resource components are introduced and analysis procedures and assumptions given for each resource component.

a. Impacts on Soils

(1) Introduction

This alternative would slightly alter sediment yield and soil erosion conditions on some allotments due to changes in vegetation ground cover.

(2) Analysis of Impacts

The following lists the impacts to sediment yield and erosion condition and the rationale for the projections.

ANALYSIS OF IMPACTS ON SEDIMENT YIELD

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotments, 875 acres (less than 1 percent of the planning unit).	
The present estimated sediment yield from these allotments is 2 acre-feet per year. It is not expected to change over the next 20 years.	Sediment yield is a function of surface geology, soils, climate, runoff characteristics, topography, land use, upland erosion, channel erosion, and ground cover. The vegetation ground cover on the allotments is not expected to change and the sediment yield would not change.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH A 50 PERCENT REDUCTION IN PROPOSED LIVESTOCK ALLOCATION (Spring, Fall, Winter)	
Forty allotments, 212,182 acres (about 99 percent of the planning unit).	
The present estimated sediment yield from these allotments is 233.4 acre-feet per year. Within 20 years on 122,498 acres (57 percent of the planning unit), the sediment yield would decrease by as much as 55 acre-feet per year while on 89,684 acres (42 percent of the planning unit) the sediment yield would remain the same.	The vegetation ground cover on 122,498 acres (57 percent of the planning unit) would increase from the current 17 percent to 22 percent and therefore the sediment yield would decrease. On 89,684 acres (42 percent of the planning unit) the vegetation groundcover would remain at 15 percent and the sediment yield would not change.

ANALYSIS OF IMPACTS ON SOIL EROSION CONDITION

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotments, 875 acres (less than 1 percent of the planning unit).	
The current soil erosion condition on the allotments are: 77 percent of the area is classified as slight, and 23 percent of the area is classified as moderate. These are not expected to change for the next 20 years.	Erosion condition is related to the amount of vegetation ground cover (Bentley and Eggleston, 1977). The vegetation ground cover on the allotments is not expected to change and the erosion conditions would not change.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH A 50 PERCENT REDUCTION IN PROPOSED LIVESTOCK ALLOCATION (Spring, Fall, Winter)	
Forty allotments, 212,182 acres (about 99 percent of the planning unit).	
The current soil erosion condition on the allotments are: 31 percent of the area is classified as stable, 53 percent of the area is classified as slight, 12 percent of the area is classified as moderate, 2 percent of the area is classified as critical, and 2 percent of the area is unclassified. Within 20 years on 122,498 acres (57 percent of the planning unit) the erosion condition would improve to: 15 percent stable, 62 percent slight, 10 percent moderate, 1 percent critical and 12 percent unclassified. On 89,684 acres (42 percent of the planning unit) the erosion condition would remain the same.	The vegetation ground cover on 122,498 acres (57 percent of the planning unit) would increase from the current 17 percent to 22 percent and the erosion condition would improved. On 89,684 acres (42 percent of the planning unit) the vegetation ground cover would remain at 15 percent and the erosion condition would not change.

(3) Assessment

The present sediment yield is estimated to be 235.4 acre-feet per year. On the "No Livestock Grazing" allotments the sediment yield would not be affected. On the "Continue Existing Continuous-Seasonal Grazing" (Spring, Fall, Winter) allotments the sediment yield would decrease on 122,498 acres (57 percent of the planning unit) because the vegetation ground cover would increase from the current 17 percent to 22 percent. On 89,684 acres (42 percent of the planning unit) the sediment yield would remain the same since the vegetation ground cover would remain the same.

Soil erosion, also affected by vegetation ground cover, would not be altered on the "No Livestock Grazing" allotments. On the "Continue Existing Continuous-Seasonal Grazing" allotments the erosion conditions would improve on 122,498 acres (57 percent of the planning unit) due to an increase in the vegetation ground cover from the current 17 percent to 22 percent. The erosion condition would improve to: 15 percent stable, 62 percent slight, 10 percent moderate, 1 percent critical and 12 percent unclassified. The erosion condition would remain the same on 89,684 acres (42 percent of the planning unit) since the vegetation ground cover would not be altered.

(4) Conclusion

Sediment yield would decrease on the planning unit by as much as 55 acre-feet per year. The overall erosion condition would improve.

b. Impacts on Water Resources

(1) Introduction

This section analyzes the impacts on water quality and water quantity under the Continue Existing Management With a 50 Percent Reduction alternative. Water quantity and quality would be affected by the changes in the vegetation ground cover.

(2) Analysis of Impacts

The following table shows the impacts to water quantity and quality and the rationale for projections.

ANALYSIS OF IMPACTS ON WATER QUANTITY

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotments, 857 acres (less than 1 percent of the planning unit).	
There is no estimated water yield from these allotments.	There is no estimated water yield from these allotments.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH A 50 PERCENT REDUCTION IN PROPOSED LIVESTOCK ALLOCATION (Spring, Fall, Winter)	
Forty allotments, 212,182 acres (about 99 percent of the planning unit).	
The present water yield from these allotments is 10,904 acre-feet per year. On 122,498 acres (57 percent of the planning unit) runoff would decrease and infiltration would increase. On 89,684 (43 percent of the planning unit) no change in runoff/infiltration would occur. These conditions are expected to remain unchanged for the next 20 years. Overland water flow from a 2-hr. intensity storm delivering 1.1 inches of precipitation would be reduced by 20 percent. No change in total water yield would occur due to livestock consumption or any other factor.	Animal grazing affects water yield by altering vegetation ground cover and soil compaction. Estimates show that the vegetation ground cover on 122,498 acres (57 percent of the planning unit) would increase from the current 17 percent to 22 percent which would decrease runoff and increase infiltration. The vegetation ground cover on 89,684 (43 percent of the planning unit) would remain at 15 percent therefore runoff and infiltration would not be affected. Overland water flow from a short duration storm is directly related to vegetation ground cover. Charts developed by SCS show that a change from 17 percent to 22 percent vegetation ground cover would cause a reduction of overland water flow of about 21 percent. Livestock consume 300 gallons of water per AUM (Stoddard and Smith, 1955). Under this alternative the amount of AUMs provided for livestock would not change.

ANALYSIS OF IMPACTS ON WATER QUALITY

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotments, 875 acres (less than 1 percent of the planning unit).	
There is no estimated water yield from these allotments.	There is no estimated water yield from these allotments.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH A 50 PERCENT REDUCTION IN PROPOSED LIVESTOCK ALLOCATION (Spring, Fall, Winter)	
Forty allotments, 212,182 acres (about 99 percent of the planning unit).	
The present water quality would improve on 122,498 acres (57 percent of the planning unit) and would remain the same on 89,684 acres (43 percent of the planning unit). These conditions are expected to remain unchanged for the next 20 years.	The vegetation ground cover on 122,498 acres (57 percent of the planning unit) would increase from th current 17 percent to 22 percent and on 89,684 acres (43 percent of the planning unit) the vegetation ground cover would remain constant at 15 percent. An increase in vegetation ground cover would increase infiltration and decrease runoff. Surface runoff contains more sediment, coliform, and other pollutants than ground water. A reduction in surface runoff would improve the overall water quality.

(3) Assessments

There is no estimated water yield on the "No Livestock Grazing" allotments nor is any projected under this alternative.

The water yield from the "Continue Existing Continuous-Seasonal Grazing (Spring, Fall, Winter)" allotments is 10,904 acre-feet per year. This total yield is not expected to change (except that reduction in the water consumed by livestock would increase the net water yield), although the amounts of runoff and infiltration would vary on the allotments as the vegetation ground cover increases or decreases.

Water quality would be altered as the amounts of runoff and infiltration are altered. Surface runoff contains more sediment, coliform, and other pollutants than groundwater. A reduction in surface runoff would improve the overall water quality by an unknown amount on 122,498 acres.

(4) Conclusion

Present water quantity would not be affected by this alternative (except for the reduction in water consumed by livestock which would increase the total water yield). Overall water quality would be improved to a degree on 57 percent of the planning unit.

c. Impacts on Vegetation

(1) Introduction

This section describes the anticipated impacts which this alternative action would have upon vegetation on public lands administered by BLM in the planning unit. Impacts to vegetation are interrelated with impacts to animal life, livestock grazing, watershed, and visual resources.

Vegetation is divided into the following sub-categories for analysis in this section--types, subtypes, and riparian conditions; vegetation ground cover; key species and vegetation composition; threatened and endangered species; forage production; forage condition; and forage condition trend.

Impacts upon each sub-category of the vegetation resource are analyzed separately, followed by an assessment of the impacts and a conclusion.

(2) Analysis of Impacts

The following are the probable impacts for the seven sub-categories of vegetation and rationale for predicting these impacts.

ANALYSIS OF IMPACTS ON TYPES AND SUBTYPES
(Including Riparian Vegetation and Condition)

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotments, 875 acres of public land (less than 1 percent of the planning unit).	
The present vegetation types are: Sagebrush type 90 acres Grass type 350 acres Pinyon-juniper type 323 acres Annual type 112 acres	Grazing intensity by wildlife is expected to remain about the same as it has been in the past. This may cause a slight decrease in browse species and tend to increase grass but not sufficiently to change the overall vegetative type.
These types are expected to change very little as a result of implementing the alternative.	
CONTINUE EXISTING CONTINUOUS SEASONAL GRAZING WITH A 50 PERCENT REDUCTION IN PROPOSED LIVESTOCK ALLOCATION (Spring, Fall, Winter)	
Forty allotments, 212,182 acres of public land (about 99 percent of the planning unit).	
The present vegetation types are: Sagebrush type 136,591 acres Grass type 25,378 acres Pinyon-juniper type 47,065 acres Broad-leaf tree 943 acres Annual type 1,450 acres Riparian type 67 acres and 688 acres of waste	
These types are not expected to change with the exception of 487 acres of annual type in the Bicknell allotment which is expected to change to a grass type within 20 years. The riparian vegetation condition is as follows: 47 acres good, 11 acres fair, and 9 acres poor. Very little change is expected within 20 years.	Grazing intensity would be reduced on 16 allotments and remain at about vegetation forage production for the remaining 24 allotments. Vegetation ground cover is expected to increase on the lighter used 16 allotments and remain about the same for the 24 allotments. The increased vegetation is not expected to change types because all species would increase except annuals. Perennial grass would replace the annual type on 487 acres in Bicknell Allotment because of the reduced grazing pressure allowing the perennial grass to more effectively compete for water and space.

ANALYSIS OF IMPACTS ON VEGETATION GROUND COVER

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotments, 875 acres public land (less than one percent of the planning unit).	
The present average vegetation ground cover is about 24 percent. This is not expected to change as a result of implementing this alternative within the next 20 years.	The factor in this case that would change vegetation ground cover is grazing intensity. Studies conducted on other range sites indicate that ground cover is inversely proportional to grazing intensity. (Kincaid et.al., 1964; Rhodes, et.al., 1964). The grazing intensity for the three allotments is equal to the vegetation forage production. Therefore no change is expected.
CONTINUE EXISTING CONTINUOUS SEASONAL GRAZING WITH A 50 PERCENT REDUCTION IN PROPOSED LIVESTOCK ALLOCATION (Spring, Fall, Winter)	
Sixteen allotments, 122,498 acres of public land (about 57 percent of the planning unit).	
By implementing the alternative action, the present average vegetation ground cover of 17 percent would be increased to about 22 percent within 20 years. This represents a 29 percent increase in vegetation ground cover.	Grazing intensity for 16 allotments would be 15 to 53 percent below the present vegetation forage production therefore, these allotments are expected to increase in vegetation ground cover.
Twenty-four allotments, 89,684 acres of public land (about 43 percent of the planning unit).	
By implementing the alternative action the present average vegetation ground cover of about 15 percent would not change within the next 20 years.	Grazing intensity for 24 allotments would be very close to the vegetation forage production, therefore, no change in vegetation ground cover is expected.

ANALYSIS OF KEY SPECIES AND VEGETATION COMPOSITION

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotments, Dez Hickman, Wildlife, and Tanner, 875 acres (less than 1 percent of the planning unit).	
As in the proposal; there would be no change in present management of these allotments. (Tanner Allotment was included in the Seven Mile Allotment in the proposal and had no livestock forage allocation, so under the proposal, management on this allotment would continue unchanged).	The present management (no livestock grazing) that has been applied for the past several years has contributed to bringing about the present vegetation composition. Management would not change under this alternative, therefore, key species and vegetation composition would remain the same.
Key species for the Tanner Allotment is Indian ricegrass which is currently 1 percent of total vegetation composition and big sagebrush which averages 56 percent of total vegetation composition.	
Present key species composition is 15 percent for the Dez Hickman and 23 percent for the Wildlife Allotment. No change in key species and vegetation composition is predicted within 20 years should this alternative be implemented.	
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH A 50 PERCENT REDUCTION IN PROPOSED LIVESTOCK ALLOCATION (Spring, Fall, Winter)	
Fourteen allotments, Bicknell Spring, Cedar Peak, Hare Lake, Smooth Knoll, Bicknell Winter, Flat Top, King Sheep, Cyclone Co-op, Cyclone, Co-op, Fishlake, Seven Mile, Miner's Mountain, Post Hollow; 144,842 acres (68 percent of the planning unit).	
It is expected that key species composition would increase slightly (less than 10 percent) or remain static. Though utilization of key species would be reduced from 60 to 40 percent or less, livestock grazing would continue during the spring, a critical plant reproduction and growth period.	Livestock grazing would be reduced by an average of 33 percent below current actual use. This would mean utilization of key species, which has been about 60 percent, would drop to about 40 percent or less. However, since livestock grazing and use by wildlife on these allotments continues well into spring, a season which is the critical period for growth and reproduction of most key species, increases would be limited. Cook (1971) indicated that utilization exceeding 25 percent during late spring may be too severe for optimum vigor and sustained yield of most range forage species.
Five allotment, Rees, Brian, Taylor Farm, Hector Hollow, and Cedar Grove; 15,877 acres (7 percent of the planning unit).	
If livestock use increases to levels that would be authorized by the alternative, and is maintained, composition of key and other desirable species may decline below present levels. The degree of decline is unknown, but key species that are presently only a trace of the total vegetation composition could be eliminated from portions of these allotments.	The alternative would allow more livestock use than is currently being used by livestock on these allotments (BLM, 1978a). Utilization of key species could increase on these allotments by implementing the alternative. This could result in a decline of these species.

ANALYSIS OF KEY SPECIES AND VEGETATION COMPOSITION (concluded)

Impacts	Rationale
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH A 50 PERCENT REDUCTION IN PROPOSED LIVESTOCK ALLOCATION (continued)	
Twenty-one allotments, Lyman, Bicknell, Lime Kiln, Loa Winter, Deleeuw, Long Hollow, Terza Flat, Neff anch, North Fremont, Sand Wash, Torrey Town, Busenbark, Donkey Hill, Government Creek, Grover, Horse Pasture, River, Spring Branch, Teasdale Bench, Teasdale Ranch, Hickman; 51,463 acres, (24 percent of the planning unit).	
It is expected that on these allotments, key and other palatable range forage plant species would increase 300 percent or more within 20 years. Average key species composition on these allotments is currently 2 percent and would increase to 6 percent or more of total vegetation composition.	Present livestock grazing (utilization) of key species on these allotments is estimated to be generally heavy (70 to 90 percent). Implementation of this alternative would reduce livestock forage allocation to 907 AUMs, one half of that proposed and less than one third of current livestock forage allocation. With this reduction in livestock grazing, utilization of key plant species, and other palatable range forage plants would be reduced from heavy to moderage or light. Studies conducted on similar ranges in western Utah by Hutchings (1953) have shown that black sagebrush, Indian ricegrass, squirreltail, and winterfat increase when utilization is reduced from heavy (70 to 90 percent) to moderate (less than 60 percent). Hutchings studies indicated a 300 percent increase in these species over a 13 year period. Similarly; an exclosure on the Terza Flat Allotment indicates a 250 percent average increase in composition of winterfat, Indian ricegrass, squirreltail, and fourwing saltbush with winterfat showing the highest percent increase. The Terza Flat exclosure has excluded all livestock grazing for 3 years and does not show the effects of reduced utilizaton, but does show the area's potential. It is expected that within 20 years, key species would respond in a like manner in all vegetation types in these allotments except for the pinyon-juniper types, as grazing pressure would be reduced from heavy to moderate levels. Because pinyon-juniper is a closed vegetation community, increase in key species would be expected to be less than in other types in this component. Also, less improvement would be expected in the Grover and North Fremont allotments because the alternative would continue to allow livestock grazing during April and May, months which are critical to growth and reproduction of the key species winterfat, fourwing saltbush, needle-and-thread grass, Indian ricegrass, and squirreltail.

ANALYSIS OF THREATENED AND ENDANGERED PLANT SPECIES

Impacts	Rationale
ALL PROPOSAL COMPONENTS	
Forty-three allotments, (213,057 acres) entire planning unit.	
The impacts this proposal would have upon the candidate and proposed threatened and endangered plant species in this planning unit are unknown, but it is expected that there would be very little if any impact.	According to BYU herbarium records (Welsh, 1976), two proposed endangered plant species (Federal Register, June 16, 1976) and two candidate threatened plant species (Welsh, 1978); have been collected within the Parker Mountain Planning Unit (see Table 2-16). Since critical habitat for these plant species has not been determined, and the extent of their individual populations is unknown, the entire planning unit is included in this impact sub-category. Any type of vegetation management, including type of grazing and vegetation manipulation, could have some inadvertant effect upon threatened or endangered plant species. Because these species are not well known, the way they respond to various types of vegetation management cannot be determined at this time.

ANALYSIS OF FORAGE PRODUCTION

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotments, 875 acres (less than 1 percent of the planning unit).	
No change is expected in forage production within 20 years for these allotments. Current production is 30 AUMs.	The present exclusion of livestock grazing which has been applied for the past several years that has brought about the current forage production would continue.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH A 50 PERCENT REDUCTION IN PROPOSED LIVESTOCK ALLOCATION (Spring, Fall, Winter)	
Fourteen allotments, 144,842 acres (68 percent of the planning unit).	
It is expected that forage production would increase or remain static. The amount of any increase would probably be less than 10 percent. Current total forage production on these allotments is 11,550 AUMs.	Livestock grazing would be reduced by an average of 33 percent below current actual use on this group of allotments. this would mean that utilization of most range forage plants would be reduced allowing some increases in abundance and productivity. However, under this alternative, livestock grazing would be permitted to continue during the spring, a critical period for growth and reproduction of most plants and this would be the limiting factor preventing an appreciable increase in forage production. Studies conducted by Cook (1971) in the Great Basin indicated that utilization exceeding 25 percent during late spring may be too severe for optimum vigor and sustained yield of most range forage plants.
Five allotments, 15,877 acres, (7 percent of the planning unit).	
If livestock use increases to levels that would be authorized by the alternative and is maintained, forage production may decline below present levels within 20 years. The degree of decline is unknown. Present production is 1,602 AUMs.	The alternative would allow more livestock use than is currently being used by livestock on these allotments (BLM, 1978). This would mean utilization of important forage species could increase on these allotments which could result in a decline in forage production within 20 years.
Twenty-one allotments, 51,463 acres (24 percent of the planning unit).	
Little or no increase in forage production is expected above the present 2,745 AUMs within 20 years.	Increases of 200 to 300 percent of desirable forage species are predicted by reducing livestock from the current heavy grazing to a moderate level (Hutchings, 1953; BLM, 1979a). However, since the desirable forage species are currently at such low levels (average 2 percent of the vegetation composition), forage production is not expected to increase appreciably.

ANALYSIS OF FORAGE CONDITION

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotments, 875 acres (less than 1 percent of the planning unit.)	
No change is expected in forage condition within 20 years for these allotments. Current forage condition is fair, 400 acres; good, 475 acres.	The present no livestock grazing management which has been applied for the past several years that has brought about the current forage condition would continue.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH A 50 PERCENT REDUCTION IN PROPOSED LIVESTOCK ALLOCATION (Spring, Fall, Winter)	
Fourteen allotments, 144,842 acres (68 percent of the planning unit).	
It is expected that forage condition on these allotments would not deteriorate, but neither would there be a measurable improvement. Forage condition would probably remain more or less static. Current forage condition on these allotments is: Good 94,980 acres 66 percent Fair 45,544 acres 31 percent poor 4,318 acres 3 percent	Forage condition is dependent upon the maintanence of, or increases in the abundance of key plant species. Because livestock grazing under this alternative would continue during the spring, a period critical to growth and reproduction of most of the key plant species on these allotments, appreciable increases in abundance of these plants would be limited. This contention is supported by the results of studies conducted in the Great Basin by Cook (1977). He found that utilization which exceeds 25 percent during late spring may be too severe for optimum vigor and sustained yield of most range forage plants. Utilization on these allotments is currently about 60 percent, the alternative would reduce livestock grazing 33 percent below current actual use. This means that utilization would probably be reduced to about 40 percent, a level which during the late spring may be too high to allow any increase in key plant species.
Five allotments, 15,877 acres (7 percent of the planning unit).	
Current forage condition is: good 9,397 acres, fair 4,188 acres, poor 2,292. If livestock use increases to levels that would be authorized by the alternative and is maintained, forage condition may decline within 20 years. The degree of decline is unknown.	The alternative would allow more livestock use than is currently being used by livestock on these allotments (BLM, 1978a). This would mean utilization of key species could increase on these allotments which could result in a decline in forage condition within 20 years.
Twenty-one allotments, 51,463 acres (24 percent of the planning unit).	
Little or no change is expected from the current forage conditions within 20 years. Current forage condition is: Good 7,236 acres 14 percent Fair 21,996 acres 43 percent Poor 22,231 acres 43 percent	Present livestock grazing (utilization) of the desirable species on these allotments is estimated to be generally heavy (70 to 90 percent). By reducing livestock grazing allocation to the livestock grazing capacity, utilization of these species would be expected to become moderate. Hutchings (1953) found on similar ranges in western Utah that production of black sagebrush, Indian ricegrass, squirreltail, and winterfat increases by an average of 300 percent within 13 years after utilization of these species is reduced from heavy (85 percent) to moderate (60 percent). Similarly, an exclosure that has been maintained for 3 years on the Terza Flat Allotment indicates a 250 percent average increase in composition of winterfat, Indian ricegrass, squirreltail and fourwing saltbush (winterfat showed the highest percent increase).

ANALYSIS OF FORAGE CONDITION (concluded)

Impacts	Rationale
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH A 50 PERCENT REDUCTION IN PROPOSED LIVESTOCK ALLOCATION (Spring, Fall, Winter)	It is expected that desirable species on these 11 allotments would respond in a like manner as grazing pressure is reduced from heavy to moderate levels. Because the desirable species that are expected to increase are currently at such low levels (average 2 percent), the predicted increases would not be adequate to raise forage to a higher condition class.

ANALYSIS OF FORAGE CONDITION TREND

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotments, 875 acres (less than 1 percent of in the planning unit).	
Trend in forage condition on these three allotments is down. Under conditions of normal precipitation and no livestock grazing, forage condition trend would continue to improve and would reach a state of relative stability within a 20 year period.	The downward trend in forage condition on these three allotments is probably due to 6 years of less than average precipitation (NOAA 1973 to 1978). It is expected that forage condition trend would improve after a few years of normal precipitation.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH A 50 PERCENT REDUCTION IN PROPOSED LIVESTOCK ALLOCATION (Spring, Fall, Winter)	
Fourteen allotments, 144,842 acres (68 percent of the planning unit).	
The current downward trend in forage condition is expected to improve initially, with normal precipitation, and become static or trend slightly upward for 20 years.	The downward trend in forage condition on these allotments is probably due to lack of precipitation. Livestock grazing would be reduced by an average of 33 percent below current actual use on this group of allotments. This would mean that utilization of most range forage plants would be reduced allowing some increases in abundance and productivity. However, under this alternative, livestock grazing would be permitted to continue during the spring, a critical period for growth and reproduction of most plants and this would be the limiting factor preventing an appreciable increase in key forage species. Studies conducted by Cook (1977) in the Great Basin indicated that utilization exceeding 25 percent during late spring may be too severe for optimum vigor and sustained yield of most range forage plants.
Five Allotments, 15,877 acres (7 percent of the planning unit).	
If livestock use increases to levels that would be authorized by the alternative and is maintained forage condition trend may continue to decline for 20 years. The degree of decline is unknown. Present forage condition trend is downward.	The current downward trend in forage condition on these allotments is probably due to lack of precipitation. The alternative would allow more livestock use than is currently being used by livestock on these allotments (BLM, 1978a). This would mean utilization of important forage species could increase on these allotments which could result in a decline in trend.
Twenty-one allotments, 51,463 acres (24 percent of the planning unit).	
The current downward trend in forage condition is expected to improve initially (with normal precipitation) and continue to improve gradually for 20 years if the proposal is implemented.	The current downward trend in forage condition on these allotments is probably due to lack of precipitation. It is expected that forage condition trend would improve initially, after a few years of normal precipitation. The increases in key species that are predicted as a result of reduced livestock grazing are expected to continue to improve the trend (Hutchings, 1953; BLM, 1979c).

(3) Overall Assessment

Forage condition on 144,842 acres (68 percent of the planning unit) is currently good on 94,980 acres, fair on 45,544 acres and poor on 4,318 acres. Forage condition is dependant upon the maintenance of, or increases in, the abundance of key plant species. Because livestock grazing under this alternative would continue during the spring, a period critical to growth and reproduction of most of the key plant species on these allotments, appreciable increases in abundance of these plants would be limited. This contention is supported by the results of studies conducted in the Great Basin by Cook (1971). He found that utilization which exceeds 25 percent during late spring may be too severe for optimum vigor and sustained yield of most range forage plants. Utilization on these allotments is currently about 60 percent. This alternative would reduce livestock grazing 33 percent below current actual use. This means that utilization would be reduced to about 40 percent, a level which during late spring may be too high to allow any increase in key plant species. Therefore; forage condition would not improve, and as shown by the current downward trend in forage condition, would deteriorate.

Forage condition on 15,877 acres (7 percent of the planning unit) is currently good on 9,397 acres, fair on 4,188 acres and poor on 2,292 acres.

This alternative, even with a 50 percent reduction in livestock forage allocation, would allow an increase in actual use on these allotments. Considering the current downward trend in forage condition, any increase in actual use would tend to increase utilization of key plant species and accelerate deterioration in forage condition and overall vegetation condition.

On 21 allotments, 51,463 acres (24 percent of the planning unit) current forage condition is good on 7,236 acres, fair on 21,996 acres and poor on 22,231 acres. On these allotments, present livestock grazing (utilization) of all palatible range forage plants is heavy, (70 to 90 percent). This alternative would reduce livestock grazing allocation to the point that utilization would be reduced from heavy to moderate. Hutchings (1953) found on similar ranges in western Utah that production of black sagebrush, Indian ricegrass, squirreltail, and winterfat increases by an average of 300 percent within 13 years after utilization of these species is reduced from heavy (85 percent) to moderate (60 percent). An exclosure on the planning unit's Terza Flat allotment illustrates that this group of allotments does have the potential for these kinds of increases. Within the exclosure, winterfat, Indian ricegrass, squirreltail and fourwing saltbush increases 250 percent in three years. The highest percent increase was shown by winterfat.

(4) Conclusion

Vegetation condition would likely improve due to increased abundance of key plant species on 51,463 acres (24 percent of the planning unit) but not enough for forage condition class to change.

Vegetation condition would not improve on the remaining 161,594 acres, 76 percent of the planning unit, and any increases in ground cover would probably be accounted for by less palatible weedy plant species.

d. Impacts on Animal Life

(1) Introduction

The analysis of this alternative found that impacts would occur on elk, antelope, mule deer, sage grouse, the endangered Utah prairie dog, and trout. Other species of wildlife found in the planning unit would not be significantly impacted by the alternative and they are therefore not discussed in this section.

(2) Analysis of Impacts

The following tables show the probable impacts and rationale for predicting impacts on mule deer, elk, antelope, sage grouse, Utah prairie dog, and fish.

ANALYSIS OF IMPACTS ON MULE DEER

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotments, 875 acres (less than 1 percent of the planning unit).	
Thee would be an increase of 6 AUMs.	There would be no change from the existing situation.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH A 50 PERCENT REDUCTION IN PROPOSED LIVESTOCK ALLOCATION (Spring, Fall, Winter)	
Forty allotments, 212,182 acres (99 percent of the planning unit).	
There would be an overall increase of 1,871 deer AUMs. However, there would need to be deer reduction programs in the Torrey Town, Teasdale Bench, Donkey Hill, and Horse Pasture allotments and there could also be a deterioration of deer winter forage with a resulting unquantifiable loss in deer numbers.	There are presently estimated 1,109 deer AUMs which the alternative allows to increase to 3,061. This would be for approximately 2,308 winter deer and approximately 800 summer. Four allotments, Torrey Town, Teasdale Bench, Donkey Hill, and Horse Pasture, allocate less wildlife AUMs than the present estimated use by mule deer. This would result in an overutilization of existing winter forage which could cause deer winter losses. The extent of these winter losses would vary inversely with the amount of available forage on winter ranges (Tueller, 1976). The continuation of the winter livestock season of use in allotments in crucial deer winter range combined with an approximately 7 percent increase in livestock use over the estimated present use, and an increase in deer numbers could cause direct competition for forage. Smith and Julander (1953) pointed out that the similarity of sheep and mule deer diets is sure to cause conflict wherever the supply of preferred (forage) species is inadequate--and Mackie (1976) stated that "Cattle often make sufficient use of important deer forage plants and feeding areas to compete seriously where stocking rates are high. When plant growth is reduced by drought or prior heavy usage, or when grazing begins too early, extends to long, or occurs on critical winter or other seasonal range areas." These conditions would occur under this alternative.

ANALYSIS OF IMPACTS ON ELK

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotments, 875 acres (less than 1 percent of the planning unit).	
No impacts.	There is no supportable evidence that elk are found in these allotments.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH A 50 PERCENT REDUCTION IN PROPOSED LIVESTOCK ALLOCATION (Spring, Fall, Winter)	
Forty allotments, 212,182 acres (99 percent of the planning unit).	
There would be an overall increase of 211 AUMs for elk. Elk numbers would increase by 80 wintering elk.	There are presently 295 elk AUMs being used in the component area. The alternative would allow for 506 AUMs which would provide for approximately 80 more elk in winter. There would be more forage provided in the Bicknell Winter, Cedar Peak, Hare Lake, and Smooth Knoll allotments because of an average livestock reduction of 34 percent in these four allotments.

ANALYSIS OF IMPACTS ON ANTELOPE

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotments, 875 acres (less than 1 percent of the planning unit).	
No impacts.	Antelope are not present in these allotments.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH A 50 PERCENT REDUCTION IN PROPOSED LIVESTOCK ALLOCATION (Spring, Fall, Winter)	
Forty allotments, 212,182 acres (99 percent of the planning unit).	
There would be an overall increase of 638 AUMs for antelope. This would provide for an increase of about 300 more antelope than the present population. In spring-summer range there could be competition for available water on the Awapa Plateau.	There are presently 617 AUMs being used by antelope. The alternative allows for 1,255. The average livetock reduction of 29 percent in the crucial winter range area (Loa Winter, Deleeuw, Long Hollow, Terza Flat, Post Hollow, Cyclone Co-op, Cyclone, and Co-op) would allow sufficient vegetation production for the increased number of antelope. Water is an undependable habitat factor on the Awapa Plateau. Often the supply is not sufficient for the present livestock use. Many of the reserviors are dry by the end of the livestock grazing season (Bowden, 1979). This requires antelope to seek water elsewhere usually by May and June which is a crucial period for does with fawn (Beale and Holmgren, 1974).

ANALYSIS OF IMPACTS ON SAGE GROUSE

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotments, 875 acres (less than 1 percent of the planning unit).	
No impacts.	There is no supportable evidence that sagegrouse are found in these allotments.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH A 50 PERCENT REDUCTION IN PROPOSED LIVESTOCK ALLOCATION (Spring, Fall, Winter)	
Forty allotments, 212,182 acres (99 percent of the planning unit).	
In 19 allotments of the alternative (76 percent of planning unit), sage grouse habitat condition could decline by an unquantifiable amount. This could be detrimental to the sage grouse population.	The alternative provides for an apparent actual reduction of use of approximately 21 percent. The season of use in sage grouse areas remains the same, which is still detrimental to the forage needed by sage grouse and also directly competes for the available forage during the crucial brooding season. Therefore, the impacts would still be detrimental because it could cause less nesting success and less chicks per brood which would reach maturity. The alternative would also provide for an actual increase of livestock use in the King Sheep and Cedar Grove allotments. The season of use by sheep in the King Sheep Allotment would detrimentally affect sage grouse winter range. The Cedar Grove Allotment season of use by sheep and cattle would be detrimental to spring brooding and winter use. The change of season of use from summer to winter sheep use in the Deleeuw Allotment would further deteriorate the remaining big sagebrush needed by grouse for winter survival (Jarvis, 1974).

ANALYSIS OF IMPACTS ON ENDANGERED UTAH PRAIRIE DOG

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotments, 875 acres (less than 1 percent of the planning unit).	
No impacts.	Prairie dogs are not present in this area.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH A 50 PERCENT REDUCTION IN PROPOSED LIVESTOCK ALLOCATION (Spring, Fall, Winter)	
Forty allotments, 212,182 acres (99 percent of the planning unit).	
On 39 allotments , the impacts of this proposal to the Utah Prairie dog would be approximately 21 percent less than the proposed action but continue to curtail prairie dog colony expansion, survival of young dogs, satelite colony success, and directly compete for available forage in and adjacent to established colonies. The impact would be even more severe in the Cedar Grove Allotment.	The alternative provides for an approximately 21 percent reduction in the apparent actual use by livestock. The beneficial impacts of this reduction are somewhat negated by continuing a season of use in prairie dog areas which is detrimental to the health and vigor of the forage which prairie dogs require. Prairie dogs would be competing for forage during the crucial lactating period. Prairie dog colonies are located in areas of highest concentration of succulent forage such as swales, reservoir areas, or "meadows." These areas are also the most preferred areas for livestock concentration. Cool season grasses, the most preferred forage of the prairie dog (Crocker-Bedford, 1976), are low in percent composition of the vegetation. The season of use for livestock in the areas coincides with the critical growing period for these species. The combined impact of livestock, some antelope, sage grouse, and prairie dog use would exceed 25 percent utilization which would cause further deterioration of these plant species (Cook, 1971). This would deprive the prairie dogs of habitat needed for maintenance of their population and expansion of colonies. In the Cedar Grove Allotment, the alternative provides for a 13 percent increase in the apparent actual use of the allotment. The same detrimental effects stated above apply here (for references and supportive data, see Chapter 3).

ANALYSIS OF IMPACTS ON FISH

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotments, 875 acres (less than 1 percent of the planning unit).	
None.	No fisheries exist in these allotments.
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH A 50 PERCENT REDUCTION IN PROPOSED LIVESTOCK ALLOCATION (Spring, Fall, Winter)	
Forty allotments, 212, 182 acres (99 percent of the planning unit).	
Fish habitat conditions would continue to decline on the 10.14 miles of trout streams found on public lands in the planning unit.	All streams would continue to have heavy grazing of the banks which would continue removal of vegetation which provides shade to the water and cover for fish. The grazing animals would also continue to cave off undercut banks which removes fish hiding cover and deposits silt in the stream. All of these factors would continue to curtail reproduction and growth of trout within the component area (for reference and documentation material, see Chapter 3).

(3) Assessment

Deer

The alternative action moderates heavy utilization of key deer winter forage (particularaly shrub sepcies) on 186,027 acres (87 percent of the planning unit). There would continue to be over-utilization of winter forage on approximately 13 percent of the unit.

Composition of key (bitterbrush and fourwing saltbush) and other desirable plant species is expected to fluctuate with available precipitation on the larger areas and decline on the smaller. The present deer population on the unit is estimated to be 1,212. They utilize 1,127 AUMs annually. The plan provides for this plus an additional 1,964 AUMs. This would accomodate about 2,199 more deer for a total winter population of 3,411.

On the larger area (87 percent) growth of the deer herds, combined with the livestock use and existing livestock season of use would begin to stress the crucial winter range in about 5 years.

Optimal levels of mule deer (about 4,013) throughout the unit utilized about 4,242 AUMs in the recent past and is expected to reach that level in the next 5 years (Bowden, 1979). In the total unit area there would be about 1,141 less AUMs available than deer requirements projected by UDWR within the next 5 years. Deer winter range would begin to decline as carrying capacity would be reached (after about 5 years), and the existing livestock numbers would conflict with the stressed deer herd with a consequent deer weight loss, low fawn survival rate or die off, and die off of mature deer, especially in severe winters.

Elk

The alternative action provides for the existing 220 elk and an increased forage allocation of 211 AUMs on 31,257 acres (15 percent of the planning unit) for winter use by 80 elk from the new elk herd on the Boulder Mountains. Sufficient vegetation (506 AUMs) would be provided for the 220 existing and the 80 additional elk. These 506 AUMs also meet the projected long term needs for elk on public land in the unit. Impacts on elk would be minimal.

Antelope

The alternative action priovides vegetation allocation (617 AUMs) sufficient for current antelope (750 animals) use. The predicted decline in the vegetation on 24 percent of the planning unit, primarily on antelope spring range, is not expected to require a readjustment of antelope numbers. The decline in livestock numbers on the 54,294 acres (25 percent of the planning unit) antelope winter range would improve the carrying capacity. There is no objective, however, to increase antelope numbers above their current authorized numbers.

Sage Grouse

Reduction of key and other desirable plant species in the spring, during nesting and the critical brooding period, would continue to adversely affect young sage grouse survival on 125,875 acres (59 percent of the public land in the planning unit), however to a lesser degree. Sage grouse nesting occurs from mid-April to early June (jarvis, 1974). If disturbed, sage grouse hens sometimes abandon their nests during egg laying and incubation. Livestock use prior to June 15th could result in disturbance of nesting hens and thus reduce nesting success. Grazing during the critical growing season of key plant species and other succulent forage will cause a reduction in these species which are a necessary factor to chick survival after hatching. The amount of expected losses is unknown.

Endangered Utah Prairie Dog

The key to survival for this endangered species is to have cool season grasses available during lactation period and cool season grasses and other succulent vegetation available as soon as the young start leaving their burrows. Livestock grazing during the spring period would result in competition between livestock and prairie dogs for succulent vegetation. This would curtail expansion of existing colonies, the loss of satellite colonies and could cause losses of animals during periods of stress such as drought. The decline of key species and other succulent vegetation species would also require praire dogs to forage greater distances from the protection of their burrows which would make them more susceptible to predation. This alternative moderates this problem, but the amount of loss is unquantifiable.

Fish

The quantity or quality of water is not predicted to change as riparian vegetation ground cover would remain essentially unchanged. However, numerous studies show that cattle trampling and concentrating along stream banks would break off overhanging banks and continue to suppress cover and shade along creek banks which would reduce the quality of habitat for fish which in turn would curtail production in numbers of fish and prevent optimum growth. The fisheries habitat condition would be expected to change as shown below:

Approximate Miles in Habitat Condition Class

	Good	Fair	Poor
Present	4	6	1
Predicted in 20 years	0	4	7

4. Conclusions

Big game allocation is summarized below:

		Current Use		Long-Term Allocation		Long-Term Projected Need[a]	
		Number	AUMs	Number	AUMs	Number	AUMs
Deer	Summer	109	1,127	238	3,091[a]	4,013[a]	4,242[a]
	Winter	1,103		1,930			
Antelope	Summer	394	617	394	617[a]	750[a]	617[a]
	Winter	750		750			
Elk	Summer	20	295	20	506[a]	262[a]	406[a]
	Winter	200		280			

[a] Winter range use only, as this is considered to be the limiting factor.

On 13 percent of the unit, overuse of the existing vegetation would occur and existing wintering deer numbers would not be supported. This would result in an immediate reduction of vegetation on those winter ranges with a resulting deer die off. On 87 percent of the unit heavy utilization of key browse plants would occur.

Within 5 years, because of theprojected increase in the deer population and existing livestock use. This would result in an inadequate forage supply for approximately 600 deer--less than the optimum number of deer proposed by the BLM MFP and projected by UDWR to be present in the planning unit by 1985 (Bowden, 1979).

Elk

Even though there is a projected decrease in key forage species in predicted elk use areas, the impact upon this mobile and migratory herd would be unquantifiable and is considered to be insignificant.

Antelope

The predicted decline in vegetation key species in both summer and winter ranges for antelope would not result in reduced carrying capacity.

Sage Grouse

Sage grouse numbers would be reduced from existing numbers as vigor of key and desirable plants, and vegetation ground cover decreased. The magnitude of this reduction is unknown.

Endangered Utah Prairie Dog

The survival rate of Utah prairie dog litters would decline which would cause a decrease in prairie dog populations, a reduction in the population growth rate or both. Insufficient data are available to determine whether or not the continued existence of the Utah prairie dog would be jeopardized. A U.S. Fish and Wildlife Service (USFWS) formal biological opinion has been requested on this matter and will be included in the final environmental statement. A copy of an informal consultation reply from USFWS is included in Chapter 9.

Fish

The quantity and quality of trout fisheries would deteriorate on approximately 11 miles of streams where livestock would continue to graze the riparian habitat.

e. Recreation

(1) Introduction

This section describes the anticipated impacts the alternative would have on hunting and fishing opportunities (i.e. quality and number of deer, elk, antelope, and sage grouse hunter days and trout fisherman days) presently provided by the Parker Mountain Planning Unit.

(2) Analysis of Impacts

The following table shows the anticipated changes and the rationale for predicting these changes that would occur in hunting and fishing opportunities.

ANALYSIS OF IMPACTS ON RECREATION

Impacts	Rationale
DEER HUNTING	
Entire planning unit, 43 allotments (213,057 acres).	
With the present hunter success ratio, the potential increase in deer numbers would provide for 22,135 additional hunter days initially and over the long term above the 12,701 hunter days presently provided by the planning unit.	Hunting demand for deer is high. Historically in the area any increase in deer has resulted in an increase in hunter success, attracting more hunters to the area and resulting in an increase in hunter days (UDWR, 1978). This alternative would allocate 1,964 additional AUMs for deer initially and over the long term above the current estimated use resulting in a potential increase in deer initially and over the long term.
ANTELOPE HUNTING	
The following 19 allotments within the Continue Existing Continuous-Seasonal Grazing (Spring, Fall, Winter) component, would be affected: Bicknell Spring, Cedar Peak, Hare Lake, Smooth Knoll, Bicknell Winter, Flat Top, King Sheep, Cedar Grove, Cyclone Co-op, Co-op, Cyclone, Fishlake, Post Hollow, Seven Mile, Loa Winter, Deleeuw, Long Hollow, Terza Flat, and North Fremont. This would include 165,365 acres (78 percent of the planning unit).	
With the present hunter success ratio, the potential increase in antelope numbers would provide for 121 additional hunter days initially and over the long term above the 117 hunter days presently provided by the planning unit.	Hunting demand for antelope is high. Historically in the area any increase in antelope has resulted in an increase in available hunting permits and hunter days (UDWR, 1978). This alternative would allocate 638 additional AUMs for antelope initially and over the long term above the current estimated use, resulting in a potential increase in antelope initially and over the long term.
ELK HUNTING	
The following 10 allotments within the Continue Existing Continuous-Seasonal Grazing (Spring, Fall, Winter) component would be affected: Bicknell Spring, Cedar Peak, Hare Lake, Smooth Knoll, Cedar Grove, Cyclone Co-op, Co-op, Cyclone, Fishlake and Seven Mile. This would include 103,122 acres (48 percent of the planning unit).	
With the present hunter success ratio, the potential increase in elk numbers would provide for 652 additional hunter days initially and over the long term above the 911 hunter days presently provided by the planning unit.	Hunting demand for elk is high. Historically in the area any increase in elk has resulted in an increase in available hunting permits and hunter days (UDWR, 1978). This alternative would allocate 211 additional AUMs for elk initially and over the long term, above the current estimated use, resulting in a potential increase in elk initially and over the long term.

ANALYSIS OF IMPACTS ON RECREATION (concluded)

Impacts	Rationale
SAGE GROUSE HUNTING	
The following 19 allotments within the Continue Existing Continuous-Seasonal Grazing (Spring, Fall, Winter) component would be affected: Bicknell Spring, Cedar Peak, Hare Lake, Smooth Knoll, Bicknell Winter, Flat Top, King Sheep, Cedar Grove, Cyclone Co-op, Cyclone, Co-op, Fishlake, Post Hollow, Loa Winter, Deleeuw, Long Hollow, Terza Flat, North Fremont and Seven Mile.	
This alternative would result in an unquantified decrease in quality and number of hunter days from the 1,119 hunter days presently provided by the planning unit.	Hunting demand for sage grouse is high. Historically in the area, any decrease in sage grouse has resulted in a decrease in hunter success, attracting less hunters to the area and resulting in a decrease in hunter days, (UDWR, 1976). This alternative would result in a decrease in 100 percent of the sage grouse habitat providing an unquantified decrease of sage grouse numbers in all affected allotments.
TROUT FISHING	
The following 11 allotments within the Continue Existing Continuous-Seasonal Grazing (Spring, Fall, Winter) component would be affected: King Sheep, Post Hollow, Deleeuw, North Fremont, Loa Winter, Long Hollow, River, Grover, Donkey Hill, Spring Branch and Hickman.	
This alternative would continue an unquantified decrease in quality and number of fisherman days provided by the Fremont River, Pine Creek, Riley Creek, Road Creek, and Fish Creek. There would be no impact to fishing opportunities provided by Mill Meadow Reservoir. Overall, this alternative would continue an unquantified decrease in the quality and number of fisherman days from the 3,000 fisherman days presently provided by the planning unit.	Any decrease in trout production (number and size) would result in a decrease in fisherman success, attracting less fishermen to the area, resulting in a decrease in fisherman days. With a decrease in trout production, the opposite would occur. This alternative would continue an unquantified decline in trout production in all fisheries except Mill Meadow Reservoir.

(3) Overall Assessment

The basis of impacts on recreation would include any change in management or allocation that would alter numbers of deer, antelope, elk, and sage grouse available for hunting and trout available for fishing.

The analysis assumes that the planning unit is providing a certain amount of hunter-fisherman success, which results in the present number of hunter-fisherman days. Hunting and fishing demand is high. With any increase or decrease in game and fish numbers, the planning unit would provide for a corresponding increase or decrease in hunter-fisherman success and days.

With the present hunter success ratio, the potential increase in deer numbers resulting from the change in allocation would provide for 22,135 additional deer hunter days initially and over the long term (12,701 hunter days are presently provided by the planning unit). The potential increase in antelope numbers resulting from the change in allocation would provide for 121 additional hunter days initially and over the long term (117 hunter days are presently provided by the planning unit). The potential increase in elk numbers resulting from the proposed change in allocation would provide for 652 additional elk hunter days initially and over the long term (911 hunter days presently provided by the planning unit).

The potential unquantified decrease in sage grouse numbers in all affected allotments would result in an unquantified decrease in hunter success and resultant hunter days (1,119 hunter days presently provided by the planning unit).

This alternative would result in an unquantified decrease in the quality and number of fisherman days provided by the Fremont River, Pine Creek, Riley Creek, Road Creek, and Fish Creek. There would be no impact to fishing opportunities provided by Mill Meadow Reservoir. Overall, this alternative would result in an unquantified decrease in the quality and number of fisherman days from the 3,000 fisherman days presently provided by the planning unit.

(4) Conclusion

As a result of the alternative, recreation values within the Parker Mountain Planning Unit would be affected as follows 1) 22,135 additional deer hunter days initially and over the long term (12,701 hunter days presently provided), 2) for 121 additional antelope hunter days initially and over the long term (117 hunter days presently provided), 3) 652 additional elk hunter days initially and over the long term (911 hunter days presently provided), 4) an unquantified decrease in sage grouse hunting success and resultant hunter days (1,119 hunter days presently provided), 5) an unquantified decrease in fisherman success and resultant fisherman days (3,000 fisherman days presently provided).

f. Impacts On Livestock Grazing

(1) Introduction

This section describes the anticipated impacts the alternative would have on livestock grazing. Major impacts would result from loss of AUMs and could require certain operators to purchase supplementary feed for their livestock.

(2) Analysis of Impacts

The following table shows the probable impacts on livestock grazing and rationale for projecting these impacts.

ANALYSIS OF IMPACTS ON LIVESTOCK GRAZING

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotments, 875 acres (less than 1 percent of the planning unit).	
There would be no impact to livestock grazing within 20 years by implementing the alternative.	Livestock have not been licensed to graze Wildlife, Tanner, and Dez Hickman allotments since before 1970. This situation would continue.
CONTINUE EXISITNG CONTINUOUS-SEASONAL GRAZING WITH A 50 PERCENT REDUCTION IN PROPOSED LIVESTOCK ALLOCATION (Spring, Fall, Winter)	
Forty allotments, 212,182 acres (99 percent of the planning unit).	
Livestock grazing would be reduced by approximately 57 percent for 20 years. The 99 livestock operators that would be affected may need to obtain additional feed for their livestock or alter their operation.	Experience has shown that livestock operators in this area are more likely to obtain additional feed from other sources to continue their yearly operations rather than sell. This probably results from the users' strong historical ties to the livestock industry and the geographic area.

(3) Overall Assessment

Ninety-nine livestock operators would have livestock grazing reduced by an average of 57 percent. The reduction in grazing would directly impact economics and vegetation. Soil, water, wildlife and recreation would be indirectly impacted.

Livestock operators that would have allocations reduced would likely obtain additional feed in order to continue their annual operation rather than sell it. This would probably result from the user's strong historical ties to the livestock industry and the geographic area.

(4) Conclusion

Livestock grazing on the planning unit would be reduced 57 percent. All 99 livestock operators on the planning unit would be affected by the reduction and would alter their operation.

g. Economics

(1) Introduction

This analysis identifies and describes probable economic impacts of the reduction from 11,180 AUMs under the proposed action to 5,583 AUMs. This also represents a reduction from the existing use of 8,285 AUMs to 5,583 AUMs, a reduction of 32.6 percent. Two scenarios are analyzed under income impacts. The first considers a change in herd size and the second analyzes the effect of increasing feed costs.

(2) Analysis of Impacts

The specific impacts on operators are identified by assessing changes in dollars per AU for cash receipts, cash expenses, and net income. This is done for three scales of operation: small, medium, and large.

The regional economic impacts are separated into direct (that is, the impacts on the range livestock industry itself), secondary (impacts on other sectors), and total impacts. The impacts include changes in output and earnings. An estimate is also made of the impact on state income and sales taxes, and for local sales and property taxes.

ANALYSIS OF IMPACTS OF "HERD CHANGE" ON RANCH INCOME

Impacts

Operator Impacts: change in Dollars per AU:

	Scale of Operation		
	Small	Medium	Large
Cash Receipts	$-10.37	$-6.11	$-8.62
Cash Expenses	- 5.49	-1.47	-2.80
Net Return	- 4.88	-4.64	-5.82
Net Return per Ranch	-296	-486	-1536
Change in Wealth position	-248	-180	- 540

Regional Economic Impacts:

	Direct	Indirect	Total
Output	$-68,613	$-82,731	$-152,344
Earnings	-18,763	-33,339	- 52,102

Public Sector Impacts

	State
Sales Tax	$-1,792
Income Tax	$-3,179

	Local
Sales Tax	$- 341
Property Tax	$- 364

Time Frame:
About five years after implementation of the alternative action.

Rationale

Under this scenario, the alternative would have the effect of reducing cash receipts, cash expenses, net return, and also the wealth position of all ranch sizes. As a result of the change in herd size, ouput from the range livestock industry would fall by $68,613 with a total reduction in regional output of $152,344. Applying the earnings output multiplier to the total output change yields a decline in total regional earnings of $52,102. Of the total change, $18,763 represents a direct earnings loss in the range livestock sector and $33,339 would be the earnings reduction in other sectors affected indirectly by the alternative action.

Using the sales tax/earnings ratio and the marginal individual income tax coefficient the following changes are estimated: For the state, income taxes are estimated to be down $3,179 and sales taxes down $1,792. At the local level, it is projected that sales taxes would be reduced by $341 and property taxes on livestock by $364.

ANALYSIS OF IMPACTS OF "FEED CHANGE" ON RANCH INCOME

Impacts

Operator Impacts: Change in Dollars per AU:

	Size of Operation		
	Small	Medium	Large
Cash Receipts	--	--	--
Cash Expenses	$+3.37	$+1.27	$+1.66
Net Returns	-3.37	-1.27	-1.66
Net Returns per Ranch	$-204	$-132	$-520
Change in Wealth Positions	$-248	$-180	$-540

Local Economic Impacts:

Change in total earnings in range livestock sector	$-63,000

Other Impacts:

Change in Hay Purchases	$+58,392
Change in Government fees	- 4,797
Change in non-fee grazing costs	-17,518
Change in feeding costs	+ 4,671

Public Sector Impacts

	State
Sales Tax	$-2,579
Income Tax	$-3,843

	Local
Sales Tax	$-413

Rationale

Due to the fact that the livestock allocation under this alternative is below present use levels, the average operator in all three categories would lose feed on the planning unit.

The effect of this on all ranch sizes would be to increase ranch expenses per AU with no effect on cash receipts.

The effect of the increased costs and decreased net income is reflected in the other local economic impacts and the public sector impacts.

Due to the actual loss of AUMs by the operators, all three ranch sizes also showed reductions in their wealth positions.

ANALYSIS OF IMPACTS ON INCOME FROM HUNTING BIG GAME

Impacts

Income from Big Game Hunting

State and Local Economy

Expenditures from big game hunting would increase from the present estimated gross of $376,800 to about $594,000. This would represent a 58 percent increase.

This would mean an estimated net increase to the State and Wayne County of $69,090 above the projected net big game income without this alternative.

Rationale

These figures are based on the number of hunter days used in the recreation section of this alternative. Hunter-day and multiplier values were obtained from the BLM Parker Mountain Planning Documents (1978) and are as follows:

Elk hunter-day	-	$54.00
Deer hunter-day	-	25.00
Antelope hunter-day	-	57.00
Direct and indirect income multiplier	-	1.875

(3) Overall Assessment

The effect of the "feed change" scenario on all ranchers would be to increase cash expenses per AU with no effect on cash receipts. This increase would be greatest for small size operators ($3.37 per AU or 1.8 percent). The effect on net income would be more significant -- a decrease of $3.37 per AU would represent a reduction of 4.8 percent.

For both the medium and large operators, the effect of the alternative on net income per AU would be relatively modest. In the case of the medium operator, this alternative is projected to decrease net income per AU from $43.51 to $42.24, a loss of 2.9 percent. For large operators, net income per AU is projected to drop from $56.43 to $54.77, a loss of 2.9 percent.

The effects of the "herd change" on net income per AU is quite close for the 3 ranch sizes. Reductions of $4.88, $4.64, and $5.82 per AU represent drops of 6.9 percent, 10.7 percent and 10.3 percent for the small, medium and large operators, respectively.

The wealth position of all three ranch sizes would also be decreased by this alternative. The large operator would have the greatest loss of about $540, with the small and medium operators losing about $248, and $180 respectively.

The effects of these losses are reflected in the state and local economies.

(4) Conclusion

The impact on livestock operators is significant. Under the "herd change" scenario, returns per operation are reduced by $296 (-7 percent), $486 (-11 percent), and $1,536 (-10 percent) for small, medium, and large operators respectively. Assuming the "feed change" situation returns per ranch are down $204 (-5 percent) for small operators, down $132 (-3 percent) for medium operators, and down $520 (-3 percent) for large-scale operators.

The net impact of this alternative under the "herd-change" scenario is to reduce earnings in the range livestock sector by about $18,800 and earnings in other sectors by $33,300. Total output in Wayne County area is projected to decline by $152,300.

The impact of this alternative under the "feed-change" scenario is to reduce earnings in the range livestock sector by about $63,000.

A major impact of this change in allocation and use would be a reduction in the total wealth position of ranch operators that is estimated to be approximately $60,800.

Public sector impacts under the "herd change" situation include a reduction of sales and income tax revenue of $4,971 at the state level. Local sales and property taxes are projected to decrease by $705. Under the "feed change" scenario, state sales and income tax collections would decrease by $6,422 and local sales tax collections would be lower by $413.

The increased wildlife AUMs could mean an additional $69,090 of net income to the state and local economies.

h. Sociology

(1) Introduction

This section describes the anticipated impacts on social conditions. Only population, attitudes, and expectations would be affected.

(2) Analysis of Impacts

The following table shows the probable impacts and rationale for projecting the impacts on population, attitudes and expectations.

ANALYSIS OF IMPACTS ON SOCIOLOGY

Impacts	Rationale
People in all of Wayne County and in the Grass Valley portions of Sevier and Piute Counties would be affected.	
Attitudes and Expectations	
The reduction of livestock forage from 12,997 AUMs to 5,583 AUMs (57 percent) would be highly resented and would surely lead to litigation. This alternative would allow wildlife use to increase from 2,039 AUMs to 4,852 AUMs (238 percent). This would indicate that the forage is still available for livestock, with some left over. It would be felt that outside influences were dictating local policy and programs which would be perceived as additional government intervention.	Past experience has shown that downward adjustments in grazing allocation cause ill feelings against the government among not only livestockmen, but other residents, including the youth.
Population	
If the alternative is implemented, 19 ranchers would probably sell their operations and, as many as 53 people may leave the area.	The number of jobs in the Wayne County area are very limited, and unemployment is high. There is no other existing industry which could provide employment in the Wayne County area, thus it is assumed that people who would lose jobs in agriculture would be forced to seek employment outside the area.

(3) Overall Assessment

The alternative would decrease grazing allocation by 50 percent and the reduction would be resented by not only by livestock operators, but by most residents of Wayne County and the affected parts of Sevier and Piute Counties. Litigation would follow implementation of the alternative. This alternative would be viewed as government intervention and outside interests being thrust upon the local people. About 19 ranchers would sell their operations, and as many as 53 people may leave the area.

(4) Conclusions

Locally, the 50 percent reduction in BLM livestock grazing would be seen as yet another instance of decisionmaking by distant authorities who fail to understand the effects on local residents. Impacts would likely include intensification of negative attitudes toward "big government," along with some efforts to gain agricultural aid to ranchers. This would take the form of lobbying activities through the Cattlemen's Association, or direct contact with elected representation. Litigation would occur.

Overall, the social impacts would be unquantifiable. To some extent, the proposal would initially contribute to an already existing alienation and frustration with government. The perception of constrained local control over the community's future would persist and resentment may intensify among long-time residents. About 19 ranchers would have to sell their operations, and about 53 people may have to leave the area.

E. ELIMINATION OF LIVESTOCK GRAZING

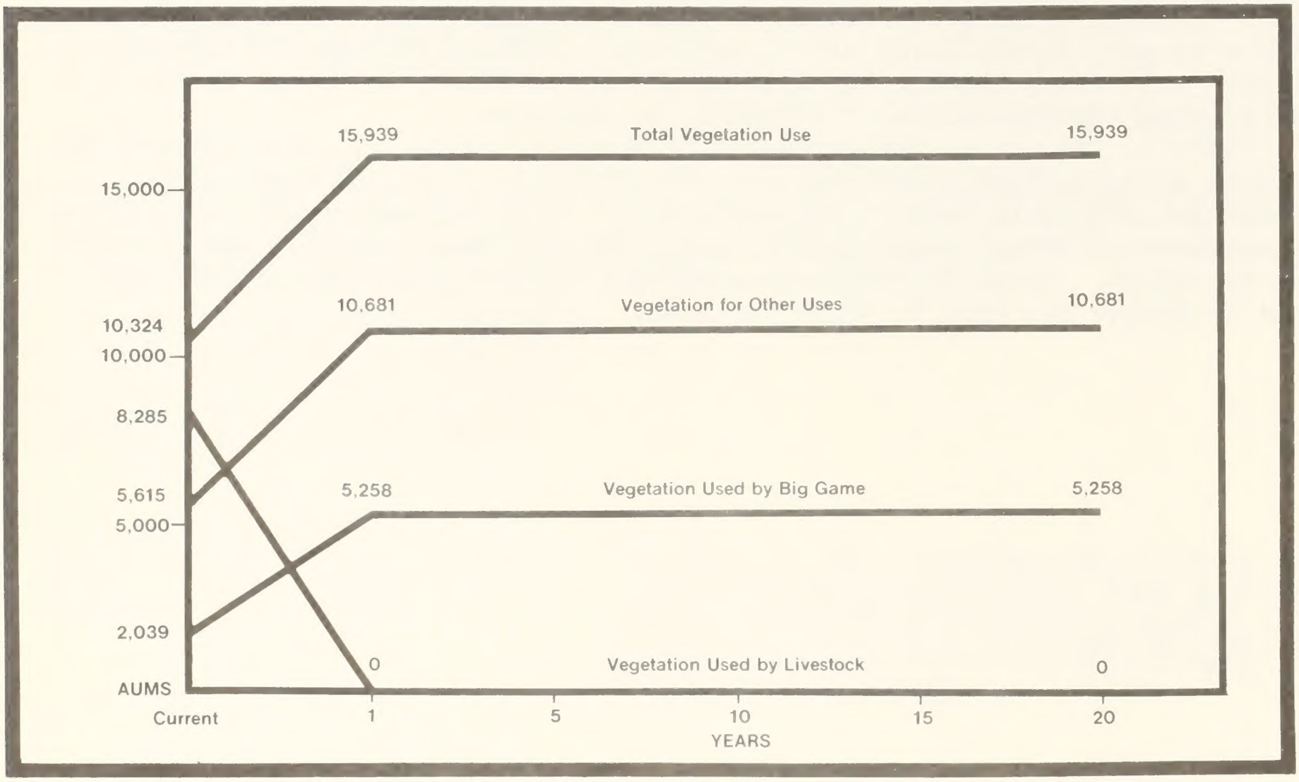
1. Description of the Alternative

a. Purpose

This alternative would eliminate authorized livestock grazing from public lands in the planning unit.

b. Component

Table 8-6 summarizes the present allocation and use of vegetation and the allocations that would be made under this alternative. The existing and alternative vegetation use would be:



EXISTING AND ALTERNATIVE (ELIMINATION OF LIVESTOCK GRAZING) VEGETATION USE

This information is given by allotment in Appendix VIII-4. Wildlife would be allocated 5,258 AUMs which represent the highest requested wildlife level in either the Unit Resource Analysis (URA) or proposed action. The remaining 10,681 AUMs of production would be allocated for other uses including recreation, watershed protection, etc.

Under this alternative, all existing grazing permits and cooperative agreements would be cancelled. Livestock operators with investments in projects built under cooperative agreements would be entitled to appropriate project salvage rights (P.L. 94-579).

TABLE 8-6

Summary of Existing Vegetation Use and Alternate Allocation[a] With Elimination of Livestock Grazing

	Existing Livestock and Wildlife Grazing Situation						Alternative Vegetation Allocation (AUMs) Initial and Long-Term		
	Vegetation Production AUMs	Present Livestock Use				Est. Current Wildlife Use (AUMs)			
Alternative Action Component		Kinds	Number	AUMs Allocated	Current Use[b]		Livestock	Wildlife	Other Uses
No Livestock Grazing	15,939	Sheep Cattle	17,882 4,180	12,997	8,285	2,039	0	5,258	10,681
TOTAL	15,939	Sheep Cattle	17,882 4,180	12,997	8,285	2,039	0	5,258	10,681

Source: Parker Mountain Planning Documents, 1978a.

[a] Appendix VIII-E contains the details of the existing vegetation use and proposed vegetation allocation; it also contains additional explanatory footnotes.

[b] Based on the average authorized active (licensed) use for the 3 year-period 1975-1977.

Due to the intermixing of private, state, and public lands within the planning unit, livestock operators would be required to prevent livestock trespass on public lands. Livestock trespass could be controlled by herding or construction of up to 140 miles of new fence around state lands and 110 miles of fence around private lands. Approximately 250 acres of surface disturbance would result from the construction of fencing. Fencing would be the responsibility of the livestock operators.

Livestock water developments would be left in place for use by wildlife. Only the planning unit boundary fences would be maintained by the BLM. Other fences would be salvaged or removed as funds became available.

2. Support Requirements

a. Labor (Work-Months) and Development Costs

Elimination of livestock grazing from public lands on the Parker Mountain Planning Unit would incur additional costs. Construction of trespass control fences could require investments of up to $500,000.00 by livestock operators. Annual trespass control and maintenance of existing water developments and boundary fences would cost approximately $30,000.00 for the BLM. Livestock operators' annual maintenance of fences could also cost approximately $30,000.00.

Payable salvage rights would be computed by the BLM, but the current value is unknown.

b. Administration and Control of Unauthorized Use and Monitoring

Administration and Trespass control would be carried out through standard BLM operating procedures as described in Chapter 1. No monitoring program would be required.

c. Implementation

This alternative would be implemented by decision within one year following the publication of the final environmental impact statement.

3. Operation and Maintenance Considerations

All fences would be built by livestock operators on private or state lands. There would be no federal control over the design of the fences. The standard procedures described in Chapter 1 would apply to removal or salvage of fences, and operation and maintenance of existing developments on public lands administered by BLM.

4. Environmental Impacts of the Alternative

Analysis indicates that there would be no significant impacts on climate, air quality, geology, topography, paleontological resources, historic resources, and wilderness values. Therefore, these resources are not discussed further in this alternative. Other resource components are introduced and analysis procedures and assumptions given for each resource component.

a. Impact on Soils

(1) Introduction

This section analyzes the impacts to soils. The sediment yield and soil erosion condition would be slightly altered on some allotments due to the change in vegetation ground cover.

(2) Analysis of Impacts

The following table shows the impacts to sediment yield and erosion condition, and the rationale for projecting these impacts.

ANALYSIS OF IMPACTS ON SEDIMENT YIELD

Impacts	Rationale
NO LIVESTOCK GRAZING	
Forty-three allotments, 213,057 acres (100 percent of the planning unit).	
The present estimated sediment yield from the allotments is 235.4 acre-feet per year. Within 20 years on 170,963 acres (80 percent of the planning unit) the sediment yield would decrease by as much as 75 acre-feet per year, and on 42,094 acres (20 percent of the planning unit) the sediment yield would remain the same.	Sediment yield is a function of surface geology, soils, climate, runoff characteristics, topography, land use, upland erosion, channel erosion, and ground cover. The vegetation ground cover on 170,963 acres (80 percent of the planning unit) would increase from the current 17 percent to 26 percent and therefore the sediment yield would decrease. On 42,094 acres (20 percent of the planning unit) the vegetation ground cover would not change from the current 12 percent and the sediment yield would remain constant.
Development: Fencing construction 250 miles.	
Sediment yield would increase on 250 acres for one to three years until the vegetation is re-established.	Past experience has shown that fence construction would disturb 1 acre of soil and 10 percent to 80 percent of the vegetation ground cover for every mile of fence built.

ANALYSIS OF IMPACTS ON SOIL EROSION CONDITION

Impacts	Rationale
NO LIVESTOCK GRAZING	
Forty-three allotments, 213,057 acres (100 percent of the planning unit).	
The current soil erosion conditions on the allotments are: 30 percent of the area is classified as stable, 53 percent of the area is classified as slight, 13 percent of the area is classified as moderate, 2 percent of the area is classified as critical, and 2 percent of the area is unclassified. Within 20 years on 170,963 acres (80 percent of the planning unit) the erosion condition would improve to: 43 percent stable, 46 percent slight, 7 percent moderate, 1 percent critical, and 3 percent unclassified; and on 42,094 acres (20 percent of the planning unit) the erosion condition would remain the same.	Erosion condition is related to the amount of vegetation ground cover (Bentley and Eggleston, 1977). The vegetation ground cover on 170,963 acres (80 percent of the planning unit) would increase from the current 17 percent to 26 percent and the erosion condition would be improve. On 42,094 acres (20 percent of the planning unit) the vegetation ground cover would remain constant at 12 percent and the erosion condition would remain the same.
Development: Fencing construction - 250 miles.	Past experience has shown that fence construction would disturb 1 acre of soil and 10 percent to 80 percent of the vegetation ground cover for every mile of fence built.
Erosion condition would increase on 250 acres for 1 to 3 years until the vegetation is established.	

(3) Assessment

The present estimated sediment yield is 235.4 acre-feet per year. The sediment yield would decrease on 170,963 acres (80 percent of the planning unit) due to an increase in the vegetation ground cover from the current 17 percent to 26 percent. The sediment yield would not be altered on 42,094 acres (20 percent of the planning unit) since the vegetation ground cover would remain constant at 12 percent. Soil erosion, also affected by vegetation ground cover, would be: 43 percent stable, 46 percent slight, 7 percent moderate, 1 percent critical, 3 percent unclassified on 170,963 acres (80 percent of the planning unit) due to the increase in vegetation ground cover and would remain the same on 42,094 (20 percent of the planning unit) where the vegetation ground cover would remain constant.

On 250 acres where soil and vegetation ground cover would be disturbed by fence construction, sediment yield would increase and erosion condition would decline for 1 to 3 years until vegetation is established.

(4) Conclusion

There would be a temporary increase in sediment yield on 250 acres; however, sediment yield on the planning unit would decrease by as much as 75 acre-feet per year. The overall erosion condition would improve.

b. Impacts on Water Resources

(1) Introduction

This section analyzes the impacts on water quality and water quantity. Water quality and water quantity would be affected by the changes in the vegetation ground cover.

(2) Analysis of Impacts

The following are the impacts to water quantity and quality.

ANALYSIS OF IMPACTS ON WATER QUANTITY

Impacts	Rationale
NO LIVESTOCK GRAZING	
Forty-three allotments, 213,057 acres (100 percent of public land in the planning unit).	
The present water yield from these allotments is 10,904 acre-feet per year. On 170,963 acres (80 percent of the planning unit) runoff would decrease and infiltration would increase. On 42,094 acres (20 percent of the planning unit) runoff and infiltration would remain the same. These conditions are expected to remain unchanged for the next 20 years. No change in total water yield would occur, except for the 3,899,100 gallon reduction in water consumed by livestock which would increase the total water yield.	Animal grazing affects water yield by altering vegetation ground cover and soil compaction. Estimates show that the vegetation ground cover on 170,963 acres (80 percent of the planning unit) would increase from the current 17 percent to 26 percent which would decrease runoff and increase infiltration. The vegetation ground cover on 42,094 acres (20 percent of the planning unit) would remain constant at 12 percent and would not change runoff or infiltration. Livestock consume 300 gallons of water per AUM (Stoddard and Smith, 1955). Under this component, the amount of AUMs provided for livestock would be reduced from 12,997 to 0.
Overland waterlow from a 2-hr. intense storm delivering 1.1 inches of precipitation would be reduced by 40 percent.	Overland water flow from a short duration storm is directly related to vegetation ground cover. Charts developed by SCS show that a change from 17 percent to 26 percent vegetaton ground cover would cause a reduction in overland water flow of about 40 percent.
Development: Fencing construction 250 miles.	
Runoff would increase on 250 acres for 1 to 3 years until the vegetation is established.	Past experience has shown that fence construction would disturb 1 acre of soil and 10 percent to 80 percent of the vegetation ground cover for every mile of fence built.

ANALYSIS OF IMPACTS ON WATER QUALITY

Impacts	Rationale
NO LIVESTOCK GRAZING	
Forty-three allotments, 213,057 acres (100 percent of the planning unit).	
The present water quality would improve on 170,963 acres (80 percent of the planning unit) and would remain the same on 42,094 acres (20 percent of the planning unit). These conditions are expected to remain unchanged for the next 20 years.	The vegetation ground cover on 170,963 acres (80 percent of the planning unit) would increase from the current 17 percent to 26 percent and would remain constant at 12 percent on 42,094 acres (20 percent of the planning unit). An increase in vegetation ground cover would increase infiltration and decrease runoff. Surface runoff contains more sediment, coliform, and other pollutants than ground water. A reduction in surface runoff would improve overall water quality.
Development: Fencing construction - 250 miles.	
The present water quality would be slightly lowered on 250 acres for 1 to 3 years until the vegetation is established.	Past experience has shown that fence construction would disturb 1 acre of soil and 10 percent to 80 percent of the vegetation ground cover for every mile of fence built. This would temporarily increase surface runoff and therefore lower the water quality.

(3) Assessment

The present water yield from these allotments is 10,904 acre-feet per year. This yield is not expected to change (except for the reduction in water consumed by livestock which would increase the total water yield) although the amounts of runoff and infiltration would vary on the allotments as the amount of vegetation ground cover varies.

The overall water quality would improve on 80 percent of the planning unit (170,963 acres). Surface runoff contains more sediment, coliform, and otehr surface pollutants than ground water. A reduction in surface runoff would improve the water quality and an increase in surface runoff would lower the water quality. Water quality would be lowered for 1 to 3 years due to disturbance of vegetation ground cover from fence constructon on 250 acres.

(4) Conclusion

Present water quantity would not be affected by this alternative, except for the increase in total water yield of about 10 acre-feet per year which would be the net amount of water consumed by livestock. Water quality would improve to a degree on 80 percent of the planning unit. Water quality could be temporarily lowered on 250 acres.

c. Impacts on Vegetation

(1) Introduction

This section describes the anticipated impacts which this alternative action would have upon vegetation on public lands in the planning unit. Impacts to vegetation are interrelated with impacts to animal life, livestock grazing, watershed, and visual resources.

Vegetation is divided into the following sub-categories for analysis in this section--types, subtypes, and riparian conditions; vegetation ground cover; key species and vegetation composition; threatened and endangered species; forage production; forage condition; and trend in forage condition.

Impacts upon each sub-category of the vegetation resource are analyzed separately, followed by an assessment of the impacts and a conclusion.

(2) Analysis of Impacts

The following tables show the probable impacts and rationale for predicting these impacts on the seven sub-categories of vegetation.

ANALYSIS OF IMPACTS ON TYPES AND SUBTYPES
(Including Riparian Vegetation and Condition)

Impacts

NO LIVESTOCK GRAZING

The entire planning unit, 213,057 acres of public land.

Present vegetation types are:

Sagebrush type	136,681 acres
Grass type	25,728 acres
Pinyon-juniper type	47,388 acres
Broad-leaf tree type	943 acres
Annual type	1,562 acres
Riparian	67 acres

With 688 acres as waste

Most of the annual type would be replaced with perennial grass type. Grass would generally increase over the entire unit. Browse species may decline on the areas preferred by wildlife. However, they are not expected to be reduced enough to cause a general type change. The riparian vegetation is expected to improve to a good condition within 20 years.

Rationale

The elimination of domestic livestock grazing would greatly reduce the harvesting of grass species especially during late spring and early summer or during the critical vegetation growth period. This would allow natural competition among native species. Annual plant species usually are greatly reduced under natural conditions.

Wildlife species generally prefer forbs and browse over grass, therefore, the grazing use of these preferred species would reduce their ability to compete with less preferred species such as grass. The grazing use by wildlife would be less than 100 percent of the vegetation production. Therefore, most species would be able to maintain their present condition.

Wildlife species do not concentrate at water sites as much as domestic animals do and damage caused by trampling and grazing would be less (Bowden, 1979).

ANALYSIS OF IMPACTS ON VEGETATION GROUND COVER

Impacts	Rationale
NO LIVESTOCK GRAZING	
Twenty-seven allotments, 170,963 acres of public land, (about 80 percent of the planning unit).	
The present average vegetation ground cover of about 17 percent is expected to increase to about 26 percent within 20 years if this alternative is implemented. This represents a 53 percent increase in vegetation ground cover.	The factor in this case that would change vegetation ground cover is grazing intensity. Studies conducted on other range sites indicate that ground cover is inversely proportional to grazing intensity (Kincaid et.al., 1964; Rhodes et.al., 1964).
	Grazing intensity authorized for 23 allotments provides for harvesting 16 to 85 percent of vegetation production. This light intensity should result in substantial increases in vegetation ground cover.
16 allotments - 42,094 acres of public land, (about 20 percent of the planning unit).	
The present average vegetation ground cover of about 12 percent is expected to remain about the same for 16 allotments for the next 20 years if this alternative is implemented.	Grazing use made by wildlife is expected to be near vegetation production and would maintain about the same ground cover.
Fence construction affecting about 250 acres spread out over the entire planning unit.	Experience has shown that, during fence construction, about 1 acre of surface per mile of fence is disturbed and that the reduction of vegetation varies from 10 to 80 percent depending on soil condition and type and on slope.
Vegetation ground cover would be reduced from 10 to 80 percent on the 250 acres disturbed during fence construction.	

ANALYSIS OF IMPACTS ON KEY SPECIES AND VEGETATION COMPOSITION

Impacts	Rationale
NO LIVESTOCK GRAZING	
Entire planning unit, 213,057 acres.	
There would probably be an overall increase in abundance of all key species and other desirable perennial plants over a 20 year period. There would be a general decrease in composition of some annual forbs, perhaps a decrease exceeding 90 percent. Basal cover of perennial grasses could increase as much as 150 percent and shrubs as much as 75 percent. Weedy grasses such as cheatgrass may increase by about one third. After a period of 20 or 30 years the area's vegetation would probably reach a state of relative stability that would not allow further increase in cover and changes in composition.	Removal of all livestock from the range would allow season after season of plant growth and reproduction interrupted only by utilization by wildlife. Big game forage allocation (5,258 AUMs) under this alternative is 162 percent of current big game allocation, 40 percent of current livestock forage allocation and only 32 percent of present total big game and livestock allocation. Therefore, foreseeable increases in big game and wildlife in general would not be enough to significantly alter predicted changes in vegetation. Studies by Robertson (1971) conducted in northern Nevada in similar vegetation types and under similar precipitation conditions indicate that the most palatible range forage plants respond by increasing as predicted when livestock grazing is eliminated. Similarly, an exclosure on the planning unit's Terza Flat allotment which has excluded livestock for three years indicates a 250 percent average increase in Indian ricegrass, squirreltail, and fourwing saltbush with winterfat showing the highest percent increase, (BLM, 1979c). An area on Wildlife Allotment, inaccessible to livestock but obviously used by deer helps further illustrate the changes in vegetation composition that could be expected. Within the area where livestock have not grazed, perennial grasses are 70 percent of total composition, blue grama comprises 15 percent of this. On an adjoining area that has been grazed by livestock, total perennial grass composition is 58 percent with blue grama accounting for 44 percent of this. Composition of shrubs is 14 percent in the grazed area and almost 18 percent in the ungrazed area (BLM, 1979c).

ANALYSIS OF IMPACTS ON THREATENED AND ENDANGERED PLANT SPECIES

Impacts	Rationale
NO LIVESTOCK GRAZING	
Entire planning unit, 213,057 acres.	
The impacts this alternative would have upon the candidate and proposed threatened and endangered plant species in this planning unit are unknown, but it is expected that there would be very little if any impact.	According to BYU herbarium records (Welsh, 1976), two proposed endangered plant species (Federal Register, June 16, 1976) and two candidate threatened plant species (Welsh, 1978); have been collected within the Parker Mountain Planning Unit (see Table 2-16). Since critical habitat for these plant spcies has not been determined, and the extent of their individual populations is unknown, the entire planning unit is included in this impact sub-category. Any type of vegetation management, including type of grazing and vegetation manipulation, could have some effect upon threatened or endangered plant species. Because these species are not well known, the way they respond to various types of vegetation management cannot be determined at this time.

ANALYSIS OF IMPACTS ON FORAGE PRODUCTION

Impacts	Rationale
NO LIVESTOCK GRAZING	
Entire Planning Unit, 213,057 acres.	
Current forage production on the planning unit is 15,939 AUMs. It is expected that if big game numbers would be limited to that allowed under this alternative-and not exceeded-that forage production could double to about 30,000 AUMs over a 20 year period under conditions of normal precipitation.	Removal of all livestock from the range would allow season after season of plant growth and reproduction interrupted only by utilization by wildlife. Big game forage allocation (5,258 AUMs) under this alternative is 162 percent of current wildlife allocation, 40 percent of current livestock forage allocation and only 32 percent of present total big game and livestock allocation. Therefore, foreseeable increases in big game and wildlife in general would not be enough to significantly alter predicted increases in forage production. Studies by Robertson (1971) conducted in northern Nevada in similar vegetation types and under similar precipitation conditions indicate that the most palatible range forage plants respond by increasing as predicted when livestock grazing is eliminated. Similarly; an exclosure on the planning unit's Terza Flat allotment which has excluded livestock for three years indicates a 250 percent average increase in Indian ricegrass, squirreltail, and fourwing saltbush with winterfat showing the highest percent increase (BLM, 1979c). An area on the Wildlife Allotment, inaccessible to livestock but obviously used by deer helps further illustrate how forage production could increase if livestock grazing were eliminated. Within the area where livestock have not grazed, perennial grasses are 70 percent of total composition, blue grama comprises 15 percent of this. On an adjoining area that has been grazed by livestock, total perennial grass compositon is 58 percent with blue grama accounting for 44 percent of this. Composition of shrubs is 14 percent in the grazed area and almost 18 percent in the ungrazed area (BLM, 1979c). Increases in abundance of perennial grasses and shrubs would increase the area's forage production capacity.

ANALYSIS OF IMPACTS ON FORAGE CONDITION

Impacts	Rationale
NO LIVESTOCK GRAZING	
Entire planning unit, 213,057 acres.	
Forage condition is currently good on 112,088 acres (53 percent), fair on 72,128 acres (34 percent), poor on 28,841 acres, (13 percent) of public land in the planning unit.	Forage condition is dependent upon the relative abundance of key and other desirable plant species in the total vegetation composition.
It is expected that if big game numbers were maintained at levels authorized by this alternative, with normal precipitation, all fair and poor condition forage would improve to good within 20 years.	Studies by Robertson (1971) conducted in northern Nevada in similar vegetation types and under similar precipitation conditions indicate that the most palatible range forage plants respond by increasing, therefore improving forage condition when livestock grazing is eliminated. Similarly; an exclosure on the planning unit's Terza Flat allotment which has excluded livestock for three years indicates a 250 percent average increase in Indian ricegrass, squirreltail, and fourwing saltbush with winterfat showing the highest percent increase (BLM, 1979c). An area on the Wildlife Allotment, inaccessible to livestock but obviuosly used by deer helps further illustrate how forage condition could improve if livestock grazing were eliminated. Within the area where livestock have not grazed perennial grasses are 70 percent of total composition, blue grama comprises 15 percent of this. On an adjoining area that has been grazed by livestock, total perennial grass composition is 58 percent with blue grama accounting for 44 percent of this. Composition of shrubs is 14 percent in the grazed area and almost 18 percent in the ungrazed area (BLM, 1979c).

ANALYSIS OF IMPACTS ON FORAGE CONDITION TREND

Impacts	Rationale
NO LIVESTOCK GRAZING	
Entire planning unit, 213,057 acres.	
Trend in forage condition on the entire planning unit is down. It is expected that with a few years of normal precipitation forage condition would begin an upward trend. However, if livestock were removed from the range, trend would improve and with normal precipitation improvement would be accelerated.	The current downward trend in forage condition on the entire planning unit is probably due to lack of precipitation. With normal precipitation, trend would improve even without implementation of this alternative. Elimination of livestock grazing would allow key and other desirable plant species to become more abundant thereby improving trend. However, improvement in forage condition trend could continue to be limited by lower than average precipitation.

(3) Overall Assessment

Implementation of this alternative would tend to cause a general change in vegetation composition. There would be an overall increase of perennial grasses, forbs and shrubs with a large decrease in weedy annuals. As big game increases there could be a slight decrease of some browse species in very localized areas.

The above changes are not expected to change any vegetation type or subtype because the general appearance would remain the same. Vegetation ground cover would increase from an average of 17 percent to 26 percent on 170,963 acres (about 80 percent of the planning unit). There would probably be no measurable change in vegetation ground cover on the remaining 42,094 acres (20 percent of the planning unit). Over a 20 year period there would be an overall increase in abundance of all key species and other dedirable plants. The amount of increase could be as much as 150 percent for grass key species and 75 percent for shrub key species. It is expected that forage production could double from the present 15,939 AUMs to about 30,000 AUMs over a 20 year period.

Forage condition is presently good on 112,088 acres, (52 percent of the planning unit), while 72,128 acres (34 percent of the plannint unit) are in poor condition. Within 20 years following elimination of livestock grazing forage now rated as being in fair or poor condition would improve to good. An exclosure on the planning unit's Terza Flat allotment has shown an improvement from poor vegetation condition to good vegetation condition within a 3 year period. Note that this exclosure has excluded big game as well as livestock, but the rapid improvement in vegetation condition indicates the area's potential under existing precipitation conditions.

Forage condition trend is down on all 213,057 acres of the planning unit. The downward trend over the entire planning unit is probably due to a lack of precipitation. It is expected that forage condition would trend upward over the entire planning unit after a few years of normal precipitation. Overall, implementation of the proposal would further contribute to improving forage condition trend under conditions of normal precipitation.

(4) Conclusions

Based on the above analysis and assessments, implementation of this alternative would beneficially affect all vegetation sub-categories over the entire planning unit. Because of increases in ground cover and key species with corresponding improvement in forage condition, the Parker Mountain Planning Unit would produce more vegetation.

d. Impacts on Animal Life

(1) Introduction

This section describes the impacts of the alternative on mule deer, elk, antelope, sage grouse, the endangered Utah prairie dog, and fish. Other species of wildlife found in the planning unit would not be significantly affected by the alternative and are not discussed.

(2) Analysis of Impacts

The following tables show the probable impacts and rationale for predicting these impacts on mule deer, elk, antelope, sage grouse, Utah prairie dog, and fish.

ANALYSIS OF IMPACTS ON MULE DEER

Impacts	Rationale
NO LIVESTOCK GRAZING	
All of the public lands, 213,057 acres, in the planning unit.	
It is anticipated that deer numbers would increase by 637 in the summer to 746 deer and by 1,770 in the winter to a total winter number of 2,873. This would be a 310 percent increase over the estimated wildlife use AUMs. However, on Torrey Town and Horse Pasture allotments the existing deer numbers cannot be supported by the existing vegetation resource and those numbers would need to be reduced by 11 and 8 deer respectively.	Except in the Torrey Town and Horse Pasture Allotments, there would be vegetation available to support the projected deer increase. UDWR has expressed a desire to increase deer numbers and the present population trend is upward.

ANALYSIS OF IMPACTS ON ELK

Impacts	Rationale
NO LIVESTOCK GRAZING	
All of the public lands, 213,057 acres, in the planning unit. Six allotment (72,908 acres or 34 percent of the planning unit) would be involved.	
The alternative would provide for elk use to increase as shown below:	Forage is available and elk numbers have been increasing (UDWR, 1978).

	Present AUMs	Future AUMs
Smooth Knoll	0	105
Cedar Peak	0	53
Hare Lake	0	53
Total	0	211

The projected increased use would be wintering elk and they would use the area for a 5 month season. Elk numbers would increase by 42 (11 percent of the existing winter herd) because of the Boulder Mountain herd and an additional herd of 80 animals would also use the area.

ANALYSIS OF IMPACTS ON ANTELOPE

Impacts — Rationale

NO LIVESTOCK GRAZING

All of the public land, 213,050 acres) in the planning unit. Twenty allotments (165,365 acres or 78 percent of the planning unit) would be involved.

The alternative would provide for antelope use to increase on 14 allotments and to remain at 25 AUMs on the Deleeuw Allotment as shown below:

	Present AUMs	Future AUMs
Cedar Peak	20	67
Hare Lake	20	67
Smooth Knoww	67	166
Flat Top	53	146
King Sheep	20	50
Cedar Grove	18	47
Co-op	65	92
Cyclone	100	171
Fishlake	7	15
Long Hollow	40	84
Terza Flat	65	75
North Fremont	19	54
Post Hollow	90	163
Seven Mile	8	33
Total	592	1,230

The 638 new AUMs would be used in the planning unit in the same ratio (summer to winter) as the present animals do. Four hundred and eight additional summer antelope and 816 additiona winter antelope could increase the total antelope herd to 802 summer (102 percent more than present) and 1,552 winter (206 percent more than present).

Vegetation and water would be available to allow the projected increase and the existing herd is increasing in numbers (UDWR, 1978).

ANALYSIS OF IMPACTS ON SAGE GROUSE

Impacts — Rationale

NO LIVESTOCK GRAZING

All of the public land , 213,057 acres, in the planning unit.

In 19 allotments (76 percent of the planning unit and 100 percent of the total sage grouse habitat in the unit), the nesting success of sage grouse and survival rate of sage grouse chicks would increase and lead to increases in sage grouse populations.

Less of the vegetation produced on the unit would be removed by ungulates. This would leave forage for all other uses especially during the spring. Succulent green forage is critical during the brooding season (Jarvis, 1974).

ANALYSIS OF IMPACTS ON ENDANGERED UTAH PRAIRIE DOG

Impacts	Rationale
NO LIVESTOCK GRAZING	
All of the public land, 213,057 acres, in the planning unit.	
Prairie dogs would be expected to increase in this alternative. The magnitude cannot be predicted.	Additional forage available during the lactating period of the spring would be important to the overall health and survival of these animals (Crocker-Bedford, et al., 1975).
The survival rate of Utah prairie dog litters could increase which would cause an increase in prairie dog populations, population growth rate, or both. This would be a beneficial impact to an endangered species.	Because climax vegetation would be detrimental to prairie dog survival, the prairie dog populations could decrease at some future date.

ANALYSIS OF IMPACTS ON FISH

Impacts	Rationale
NO LIVESTOCK GRAZING	
All public land in the planning unit (213,057 acres).	
All streams (10.18 miles of fish habitat) in the planning unit benifit from no livestock grazing and would improve to good condition. Fish size and numbers would be expected to increase.	It has been shown that after 4 years of no livestock grazing, stream habitat improved from poor to good (Duff, 1978). It has also been shown that fish populations and size are greater in ungrazed than in grazed portions of streams (Duff, 1977 and 1978).

3. Assessment

Deer

The alternative action would eliminate heavy utilization of key deer winter forage (particularaly shrub species) on 213,057 acres (100 percent of the planning unit).

Composition of key (bitterbrush and fourwing saltbush) and other desirable plant species is expected to increase. The present deer population is estimated to be 996. They utilize 1,129 AUMs annually. The alternative provides for this plus an additional 2,370 AUMs. This would accomodate about 2,654 more deer for a total winter population of about 3,866.

Thus, in this unit, over-utilization of crucial winter habitat would cease after approximately 5 years.

UDWR's desirered levels of mule deer (about 4,013 animals) could be reached in about 5 years (Bowden, 1979). Thus in the total unit, there would be about 745 AUMs less than deer needs projected by UDWR within the next 5 years. Deer winter range would rapidly begin to improve. There could be, however, small, isolated pockets where deer numbers might exceed the carrying capacity. With no livestock competition, the carrying capacity of the range could increase. The extent of such an increase is unquantifiable.

Elk

The alternative provides for an additional 506 AUMs of forage throughout the planning unit. Sufficient vegetation would be provided for the 220 existing and 80 additional elk. These 506 AUMs also meet the projected long term needs for elk on public land in the unit. The carrying capacity for elk may be limited by the carrying capacity of the summer range on the National Forest and State Land Block.

Antelope

The alternative provides sufficient forage for current antelope (750 animals) use. The expected increase in key plant species on antelope winter range would increase the carrying capacity. The increase is not quantifiable, but would be significant, and limited only by the amount of available water.

Sage Grouse

The expected increase of key and other desirable plant species in the spring, during nesting and the critical brooding period, would enhance young sage grouse survival on all of the sage grouse range on public land in the planning unit. Lack of livestock grazing during the critical growth period of key plant species and other succulent forage would cause them to increase. The amount of the expected increase is unknown. The sage grouse population could be expected to increase rapidly.

Endangered Utah Prairie Dog

The key to survival for this endangered species is to have cool season grasses available during lactation period and cool season grasses and other succulent vegetation available as soon as the young start leaving their burrows. Lack of livestock grazing during the spring period would result in no competition between livestock and prairie dogs for succulent vegetation. This would enhance expansion of existing colonies, improve the chances for success of satellite colonies, and would reduce losses of animals during periods of stress such as drought. The increase of key species and other succulent vegetation species would also require praire dogs to forage less distance from the protection of their burrows which would make them less susceptible to predation. This would occur rapidly for an unknown length of time. At some future date, the prairie dogs would be expected to decrease as climax vegetation would be ultimately detimental to their survival.

Fish

The quantity or quality of water is predicted to change significantly as vegetation ground cover would increase about 26 percent. Also numerous studies have shown that cattle trampling and concentrating along stream banks break off overhanging banks and suppress cover and shade along creek banks which would reduce the quality of habitat for fish. The fisheries habitat condition would be expected to change as shown below. Beyond the long-term 20 years, the habitat would be expected to become detrimental, lacking fires or other vegetation modification.

Approximate Miles in Habitat Condition Class

	Good	Fair	Poor
Present	4	6	1
Predicted in 20 years	11	0	0

4. Conclusions

Big game allocation is summarized below:

		Current Use		Long-Term Allocation		Long-Term Projected Need[a]	
		Number	AUMs	Number	AUMs	Number	AUMs
Deer	Summer	109	1,127	238	3,497[a]	4,013	4,242
	Winter	1,103		1,930			
Antelope	Summer	394	617	394	1,255[a]	750	617
	Winter	750		750			
Elk	Summer	20	295	20	506[a]	262	406
	Winter	200		242			

[a] This number is winter use only as this is considered to be the current limiting factor.

On all allotments, overuse of the existing vegetation would cease and existing wintering deer numbers would be easily supported. This would result in an immediate improvement of vegetation on those winter ranges with a resulting improvement of the deer numbers and condition.

Within 5 years, because of the projected increase in the deer population and increase in the vegetation resource there could be vegetation under-utilization on most all deer winter ranges in the planning unit. This would result in more than adequate forage supply for the number of deer proposed by the BLM MFP and the number desired by UDWR (Bowden, 1979).

Elk

Even though an increase in key forage species is predicted for elk use areas, the impact upon this mobile and migratory herd is unquantifiable, but could mean an increase in elk use of the planning unit.

Antelope

The predicted increase in vegetation key species (black sagebrush and winterfat) on both summer and winter antelope ranges antelope would result in increased carrying capacity of the winter range. This would result in increased survival for an unknown amount of antelope. As the carrying capacity of the range increased, there would likely be a need for a new adjustment of antelope.

Sage Grouse

Sage grouse numbers would increase from existing numbers as vigor of key and desirable plants and vegetation ground cover improve. The magnitude of the increase is unknown.

Endangered Utah Prairie Dog

The survival rate of Utah prairie dog pups would improve. Prairie dog populations would increase and population growth rate would be assured. The continued existence of the Utah prairie dog would not be jeopardized in the near future--5 to 10 years. A U.S. Fish and Wildlife Service (USFWS) formal biological opinion has been requested on this matter and will be included in the final environmental statement. A copy of an informal consultation reply from USFWS is included in Chapter 9.

Fish

The quantity and quality of trout fisheries would improve on approximately 11 miles of streams.

e. Archaeological Resources

(1) Introduction

This section analyzes the impacts that this alternative would have on archaeological resources.

ANALYSIS OF IMPACTS ON ARCHAEOLOGICAL RESOURCES

Impacts	Rationale
Forty-three allotments, 213,587 acres (all of the planning unit).	
Fence construction in or along the boundaries of 43 allotments, if necessary, would cause ground-disturbance on 250 acres.	The implementation of the design features and required inventories described in Chapter 1 would not be required on private land. Therefore, any impact to archaeological sites on non-federal land would not be mitigated.
Twenty-three sites have been recorded in seven of the allotments included in the alternative. Little or no archaeological inventory has been done in the remaining allotments, but additional sites are assumed to exist in the area.	
The construction of fences involves ground-disturbing actions. Even with the implementation of proposed mitigation, these ground-disturbing actions could inadvertently damage or destroy archaeological resources resulting in a loss of scientific and educational information.	

(2) Overall Assessment

Twenty-three sites have been recorded on seven allotments within the planning unit. Limited archaeological resource inventory has been done on the remaining allotments, but additional sites are assumed to exist in the area.

Approximately 250 acres of ground-disturbance would be caused by construction activities on private and state land. None of the mitigation described in the proposal applies to non-federal land, so any impacts to archaeological resources located there would be unavoidable. These ground-disturbing actions involve 250 miles of fence construction.

The intensive archaeological resource inventory required by the proposed mitigation would be a beneficial impact to the resource as it would result in the recordation and documentation of previously unknown areas and sites.

(3) Conclusion

Any impacts to archaeological resources on non-federal land resulting from this action could not be mitigated.

f. Visual Resources

(1) Introduction

This section describes the impacts alternative would have on visual resources (as defined in Visual Resource Management Class areas) within the Parker Mountain Planning Unit.

ANALYSIS OF IMPACTS ON VISUAL RESOURCES

Impacts	Rationale
ENTIRE PLANNING UNIT	
(All allotments where new fencing would be constructed.)	
Two miles of fencing in the Hickman and River allotments could be located in VRM Class II areas. The visual modification that would occur may not always be compatible with management objectives for VRM Class II areas on adjacent federal land over the short term, but would probably be compatible with VRM Class II management objectives over the long term.	Because BLM would have no control over vegetation and ground disturbance and the presence of structures resulting from construction of fencing on state and private land, the resulting visual modification could in some cases exceed acceptable landscape feature modification for VRM Class II areas over the short term, but would probably not exceed acceptable landscape feature modification for VRM Class II areas over the long term.
All other fencing would be located in VRM Class III and IV areas. In all cases, the visual modification that would occur would be compatible with the management objective for the VRM Class area in which it would be located.	Vegetation and ground disturbance and the presence of structures resulting from the construction of up to 250 miles of fencing would cause a visual modification that would not exceed acceptable landscape feature modification for VRM Class II and IV areas.

(2) Overall Assessment

Range development would be the source of impacts to the visual resource . Vegetation and ground disturbance and the presence of structures resulting from the construction of up to 250 miles of fencing on state and private land, would cause a visual modification of the landscape.

Two miles of fencing in the Hickman and River allotments may be located in VRM Class II areas. Because the BLM would have no control over fence construction, visual modification from fence construction may not always be compatable with VRM Class II management objectives over the short term, but would probably be compatible with VRM Class II management objectives over the long term.

All other range developments would be located in VRM Class III and IV areas. In all cases the visual modification would be compatible with the management objectives for the VRM Class area in which it would occur.

(3) Conclusion

Because the BLM would have no control over fence construction, the visual modification from construction of two miles of fencing in VRM Class II areas within the Hickman and River allotments may not always be compatible with VRM Class II management objectives over the short term, but would probably be compatible with VRM Class II management objectives over the long-term. In all other cases, visual modification from fencing would be compatible with VRM management objectives.

g. Recreation

(1) Introduction

This section describes the anticipated impacts on hunting and fishing opportunities (i.e. quality and number of deer, elk, antelope and sage grouse hunter days and trout fisherman days) presently provided by the Parker Mountain Planning Unit.

(2) Analysis of Impacts

The following table shows the anticipated changes and the rationale for predicting these changes that would occur to hunting and fishing opportunities.

ANALYSIS OF IMPACTS ON RECREATION

Impacts	Rationale
DEER HUNTING	
Entire Planning Unit, 39 allotments (213,057 acres).	
With the present hunter success ratio, the potential increase in deer numbers would provide for 26,709 additional hunter days initially and over the long term above the 12,701 hunter days presently provided by the planning unit.	Hunting demand for deer is high. Historically in the area any increase in deer has resulted in an increase in hunter success, attracting more hunters to the area and resulting in an increase in hunter days (UDWR, 1978). The alternative would allocate 2,370 additional AUMs for deer initially and over the long term above the current estimated use, resulting in a potential increase in deer initially and over the long term.
ANTELOPE HUNTING	
The following 19 allotments would be affected: Bicknell Spring, Cedar Peak, Hare Lake, Smooth Knoll, Bicknell Winter, Flat Top, King Sheep, Cedar Grove, Cyclone Co-op, Co-op, Cyclone, Fishlake, Post Hollow, Seven Mile, Loa Winter, Deleeuw, Long Hollow, Terza Flat, and North Fremont. This would include 165,365 acres (78 percent of the planning unit).	
With the present hunter success ratio, the potential increase in antelope numbers would provide for 121 additional hunter days initially and over the long term above the 117 hunter days presently provided by the planning unit.	Hunting demand for antelope is high. Historically in the area any increase in antelope has resulted in an increase in available hunting permits and hunter days (UDWR, 1978). The alternative would allocate 638 additional AUMs for antelope initially and over the long term above the current estimated use, resulting in a potential increase in antelope initially and over the long term.
ELK HUNTING	
The following 10 allotments would be affected: Bicknell Spring, Cedar Peak, Hare Lake, Smooth Knoll, Cedar Grove, Cyclone Co-op, Cyclone, Co-op, Fishlake and Seven Mile. This would include 103,122 acres (48 percent of the planning unit).	
With the present hunter success ratio, the potential increase in elk numbers would provide for 652 additional hunter days initially and over the long term from the 911 hunter days presently provided by the planning unit.	Hunting demand for elk is high. Historically in the area any increase in elk has resulted in an increase in available hunting permits and hunter days (UDWR, 1978). The alternative would allocate 211 additional AUMs for elk initially and over the long term above the current estimated use, resulting in a potential increase in elk initially and over the long term.

ANALYSIS OF IMPACTS ON RECREATION (concluded)

Impacts	Rationale
SAGE GROUSE HUNTING	
The following 19 allotments would be affected: Bicknell Spring, Cedar Peak, Hare Lake, Smooth Knoll, Bicknell Winter, Flat Top, King Sheep, Cedar Grove, Cyclone Co-op, Cyclone, Co-op, Fishlake, Post Hollow, Loa Winter, Deleeuw, Long Hollow, Terza Flat, North Fremont and Seven Mile. This would include 162,014 acres (76 percent of the planning unit).	
The alternative would result in an unquantified increase in quality and number of hunter days above the 1,119 hunter days presently provided by the Parker Mountain Planning Unit.	Hunting demand for sage grouse is high. Historically in the area, any increase in sage grouse has resulted in an increase in hunter success, attracting more hunters to the area and resulting in an increase in hunter days. The alternative would improve sage grouse habitat and increase sage grouse numbers in all affected allotments.
TROUT FISHING	
The following 11 allotments would be affected: King Sheep, Post Hollow, Deleeuw, North Fremont, Loa Winter, Long Hollow, River, Grover, Donkey Hill, Spring Branch and Hickman.	
The alternative would result in an unquantified increase in quality and number of fisherman days provided by the Fremont River, Pine Creek, Riley Creek, Road Creek, and Fish Creek. There would be no impact to fishing opportunities presently provided by Mill Meadow Reservoir. Overall, this alternative would result in an unquantified increase in quality and number of fisherman days above the 3,000 fisherman days presently provided by the planning unit.	Any increase in trout production (number and size) would result in an increase in fisherman success, attracting more fishermen to the area, resulting in an increase in fisherman days. The alternative would result in an unquantified increase in trout production in all fisheries except Mill Meadow Reservoir.

(3) Overall Assessment

The basis of impacts on recreation would include any change in management or allocation that would alter numbers of deer, antelope, elk, and sage grouse available for hunting and trout available for fishing.

The analysis assumes that with present numbers of game and fish, the planning unit is providing a certain amount of hunter-fisherman success which results in the present number of hunter-fisherman days. Hunting and fishing demand is high. With any increase or decrease in game and fish numbers, the planning unit would provide for a corresponding increase or decrease in hunter-fisherman success and days.

The potential increase in deer numbers resulting from the change in allocation would provide for 26,709 additional deer hunter days initially and over the long-term (12,701 hunter days presently provided by the planning unit). The potential increase in antelope numbers would provide for 121 additional hunter days initially and over the long term (117 hunter days presently provided by the planning unit). The potential increase in elk numbers would provide for 652 additional elk hunter days initially and over the long-term (911 hunter days presently provided by the planning unit).

A potential unquantified increase in sage grouse numbers in all affected allotments would result in an unquantified increase in hunting success and resultant hunter days (1,119 hunter days presently provided by the planning unit).

The potential unquantified increase in trout production in all fisheries except Mill Meadow Reservoir would result in an unquantified increase in quality and number of fisherman days provided by the Fremont River, Pine Creek, Riley Creek, Road Creek, and Fish Creek. There would be no impact to fishing opportunities presently provided by Mill Meadow Reservoir. Overall, the alternative would provide an unquantified increase in the quality and number of fisherman days above the 3,000 fisherman days presently provided by the planning unit.

(4) Conclusion

Hunting and fishing opportunities within the Parker Mountain Planning Unit would be affected as follows: 1) 26,709 additional deer hunter days initially and over the long term (12,701 hunter days presently); 2) 121 additional antelope hunter days initially and over the long term (117 hunter days presently); 3) 652 additional elk hunter days initially and over the long term (911 hunter days presently); 4) an unquantified increase in sage grouse hunting success and resultant hunter days (1,119 hunter days presently); and 5) an unquantified increase in fisherman success and resultant fisherman days (3,000 fisherman days presently provided).

h. Livestock Grazing

(1) Introduction

This section describes the anticipated impacts the alternative would have on livestock grazing. Major impacts would result from loss of AUMs and could require certain operators to purchase supplementary feed for their livestock or alter their operation. Some livestock operators may go out of business.

(2) Analysis of Impacts

The following table shows the probable impacts on livestock grazing and rationale for projecting these impacts.

ANALYSIS OF IMPACTS ON LIVESTOCK GRAZING

Impacts	Rationale
NO LIVESTOCK GRAZING	
Three allotments, 875 acres (less than 1 percent of the planning unit).	
There would be no impact to livestock grazing within 20 years by implementing the alternative on these three allotments.	Livestock have not been licensed to graze Wildlife, Tanner, or Dez Hickman allotments since 1970 or before. This situation would continue.
Forty allotments, 212,182 acres (99 percent of the planning unit).	
The elimination of livestock grazing for 20 years would mean the 99 livestock operators would need to obtain additional feed for their livestock or alter their operation. Some operators may go out of business.	Experience has shown that livestock operators in this area are more likely to obtain additional feed from other sources or alter their operation to continue their yearly operations rather than sell. This probably results from the users' strong historical ties to the livestock industry and the geographic area. As many as 63 of the 99 livestock operators who rely heavily on the Parker Mountain Planning Unit for their annual livestock operation may go out of business.

(3) Overall Assessment

The alternative would eliminate livestock grazing from the planning unit. Some of the 99 livestock operators that would be impacted would likely obtain the needed feed or alter their operation in order to continue their annual livestock operation. As many as 63 of the 99 operators may go out of the livestock business.

Elimination of livestock grazing on the planning unit would directly impact social attitudes, economics and vegetation. Soil, water, wildlife, and recreation would be indirectly impacted.

(4) Conclusion

Elimination of livestock grazing would adversely affect all livestock operators using the planning unit. Some would alter their current operation; others would sell their livestock and seek other employment.

i. Economics

(1) Introduction

The analysis identifies and describes the probable economic impacts of the alternative action. This analysis includes the impact of this action on changes in rancher income and wealth positions, the regional economy, and impacts from hunting big game animals. It does not, however, indicate the wide differences in impacts that may occur to individual operators.

(2) Analysis of Impacts

The specific impacts on operators are identified by assessing changes in dollars per AU for cash receipts, cash expenses, and net income. This is done for three scales of operation: small, medium, and large.

The regional economic impacts are separated into direct (that is, the impacts on the range livestock industry itself), secondary (impacts on other sectors), and total impacts. The impacts include changes in output and earnings. An estimate is also made of the impact on state income tax and sales taxes and local sales and property tax.

ANALYSIS OF IMPACTS OF "HERD CHANGE" ON RANCH INCOME

Impacts

The income of both livestock operators and the local economy of Wayne County would be affected.

a. Operator Impacts: Change in Dollars per AU:

	Scale of Operation		
	Small	Medium	Large
Cash Receipts	$-28.86	$-45.80	$-41.18
Cash Expenses	-12.29	-12.18	-13.50
Net Return	-16.57	-33.62	-27.68
Net Return per Ranch	$-1,005	$-3,519	$-7,308
Change in wealth position	$ - 833	$-1,643	$-2,835

b. Regional Economic Impacts -

	Direct	Indirect	Total
Output	$-224,289	$-273,705	$-497,994
Earnings	- 61,313	-109,001	-170,314

c. Public Sector Impacts

	State Total
Local Sales Tax	$-5,857
State Income Tax	-10,389

	Local
Sales Tax	$-1,116
Property Tax	$-1,331

Rationale

Under this scenario, the alternative would have the effect of reducing cash receipts, cash expenses, net return, and also the wealth position of all ranch sizes. As a result of the change in herd size output from the range livestock industry would fall by $224,289 with a total reduction in regional output of $497,994. Applying the earnings/output multiplier to the total output change yields a decline in total regional earnings of $170,314. Of the total change, $61,313 represents a direct earnings loss in the range livestock sector and $109,001 would be the earnings reduction in other sectors affected by the alternative action.

Using the sales tax/earnings ratio and the marginal individual income tax coefficient the following changes are estimated: For the state, income taxes are estimated to be down $10,389 and sales taxes down $5,857. At the local level, it is projected that sales taxes would be reduced by $1,116 and property tax from livestock by $1,331.

ANALYSIS OF IMPACTS OF "FEED CHANGE" ON RANCH INCOME FROM GRAZING

Impacts

The income of both the livestock operators and Wayne County would be affected.

a. Operator impacts: Change in Dollars per AU:

	Size of Ranch Operation		
	Small	Medium	Large
Cash Receipts	--	--	--
Cash Expenses	$+9.20	$+11.82	$+6.86
Net Returns	-9.20	-11.82	-6.86
Net Return per Ranch	$-558	$-1,237	$-1,811
Change in wealth position	$-883	$-1,643	$-2,835

b. Other Impacts

Total earnings in range livestock sector	$-141,000
Hay Purchases	$+179,508
Government fees	- 53,852
Feeding Costs	+ 14,361

c. Public Sector Impacts

	State
Income Tax	$-8,601
Sales Tax	-4,849

	Local
Sales Tax	$-924

Rationale

Under the "feed change" scenario net returns per ranch are estimated to decline by $558, $1,237, and $1,811, for small, medium, and large operators, respectively. As a result of the alternative action under this scenario, hay purchases would have to be increase by $179,508. In addition, feeding costs would be increased by $14,361. Partly offsetting these cost increases would be a reduction in government fees of $53,852. The net result of the proposed action under this scenario would be a reduction in total earnings for the range livestock sector of $141,000.

The result of the earnings reduction in the livestock sector would reduce sales tax collections at the state level by $4,849, at the local level by $924. State collections of individual income taxes are estimated to be reduced by $8,601.

ANALYSIS OF IMPACTS ON INCOME FROM HUNTING

Impacts

Income from Big Game Hunting

State and Local Economy:

Expenditures from big game hunting supported by the planning unit would increase from the present estimated $376,800 to about $709,830. This represents an 88 percent increase.

This would mean an estimated net increase of $120,045 above the projected net big game income without the proposal.

Rationale

These figures are based on the number of hunter days used in the recreation section of this alternative. Hunter-day and multiplier values were obtained from the BLM Parker Mountain Planning Documents and are as follows:

Elk hunter-day	-	$54.00
Deer hunter-day	-	25.00
Antelope hunter-day	-	57.00
Direct and indirect income multiplier	-	1.875

(3) Overall Assessment

The effect of the "feed change" scenario on all ranchers would be to increase cash expenses per AU with no effect on cash receipts. The increase in cash expenses would be greatest for medium operators, an increase of $11.82 per AU or 6.1 percent. The effect on net income would be more significant--a decrease of $11.82 per AU represents a loss of 27.1 percent.

For both the small and large operators, the effect of the alternative on net income per AU would also be substantial. In the case of the small operator, the alternative is projected to decrease net income per AU from $70.35 to $61.15 a drop of 13.1 percent. For large operators, net income per AU is projected to decrease from $56.43 to $49.57, a loss of 12.2 percent.

The effects of the "herd change" scenario on the medium operators would also be quite significant. Cash receipts per AU are estimated to decrease 13.0 percent; expenses per AU would decrease by 6.3 percent and net income per AU is projected to drop 77.3 percent. The effects on large operators would be similar, with net income per AU dropping from $56.43 to $28.75--a loss of 49.1 percent. Per AU net income for the average small operator would decrease from $70.35 to $53.78 for a loss of 23.6 percent.

The wealth positions of all ranch sizes would be negatively affected by this alternative. The average small, medium, and large operators would lose $833, $1,643, and $2,835 respectively.

It is presently estimated that big game hunting supported by the Parker Mountain Planning Unit accounts for about $376,800 of gross income and $165,800 of net income.

With the implementation of this alternative, net income would be approximately $312,325 or about $120,045 (62 percent) more than it would be without the alternative.

(4) Conclusion

The result of this alternative action under the "feed change" scenario would be a decreased range livestock sector of $141,000. Under the "herd change" scenario, earnings in the livestock sector would drop by $61,313. Secondary impacts would include an earnings loss of $109,000 in other sectors. A major impact of this alternative would be a decrease in the wealth position of ranch operators that is estimated to be approximately $186,413.

Impacts on ranch operators would be: under the "herd change" scenario, the net returns per ranch are down $1,005 (-24 percent) for small operators, down $3,519 (-77 percent) for medium operators, and down $7,308 (-49 percent) for large operators. Under the "feed change" scenario, net returns per ranch are down $558 (-13 percent), $1,237 (-27 percent), and $1,811 (-12 percent) for small, medium, and large-scale operators respectively.

Public sector impacts under the "herd change" situation include a sales and income tax decrease of $16,246 at the state level. Local sales and property taxes are projected to drop by a total of $2,447. Under the "feed change" scenario, state sales and income tax collections would decrease by $4,849 and local sales tax collections would be lower by $924.

The increased wildlife AUMs could mean an additional $120,045 of net income to the state.

j. Sociology

(1) Introduction

This section describes the anticipated impacts on social conditions. Only population, attitudes, and expectations would be affected.

(2) Analysis of Impacts

The following table shows the probable impacts and rationale for projecting the impacts on population, attitudes, and expectations.

ANALYSIS OF IMPACTS ON SOCIOLOGY

Impacts	Rationale
People in all of Wayne County and the Grass Valley portions of Sevier and Piute counties would be affected.	
Attitudes and Expectations	
The people in Wayne County and Grass Valley would be affected. The people in the affected areas have historic and sentimental ties to the livestock industry.	Past experience has shown that downward adjustments in grazing allocation causes ill feelings against the government among not only livestockmen, but other local residents, including the youth.
Complete elimination of livestock grazing from 12,997 AUMs to zero (100 percent) would be highly resented and would surely lead to litigation.	
This alternative would allow wildlife to reach maximum numbers with AUMs left over. This would indicate that the forage is still available for livestock. It would be felt that outside influences were dictating local policy and programs which would be perceived as additional government intervention.	
Population	
If the alternative is implemented, is is estimated that as many as 63 of the 99 ranchers would sell their operations and as many as 177 people may leave the area.	The number of jobs in the Wayne County area are very limited, and unemployment is high. There is no other existing industry which could provide employment in the Wayne County area; thus it is assumed that people who would lose jobs in agriculture would be forced to seek employment outside the area.

(3) Overall Assessment

The alternative would be resented by livestock operators and most of the people in Wayne County and the affected parts of Sevier and Piute Counties. As many as 63 ranchers would sell their operations and as many as 177 people may leave the area.

Locally, the elimination of livestock grazing from public lands would be seen as yet another instance of decisionmaking by distant authorities who fail to understand the effects on local residents. Impacts would likely include intensification of negative attitudes toward "big government," along with some efforts to gain agricultural aid to ranchers. This would take the form of lobbying activities through the Cattlemen's Association, or direct contact with elected representation.

(4) Conclusion

Overall, the social impacts would be unquantifiable. To some extent, the proposal would initially contribute to an already existing alienation and frustration with government. The perception of constrained local control over the community's future would persist and resentment may intensify among long-time residents. Litigation against the government would occur.

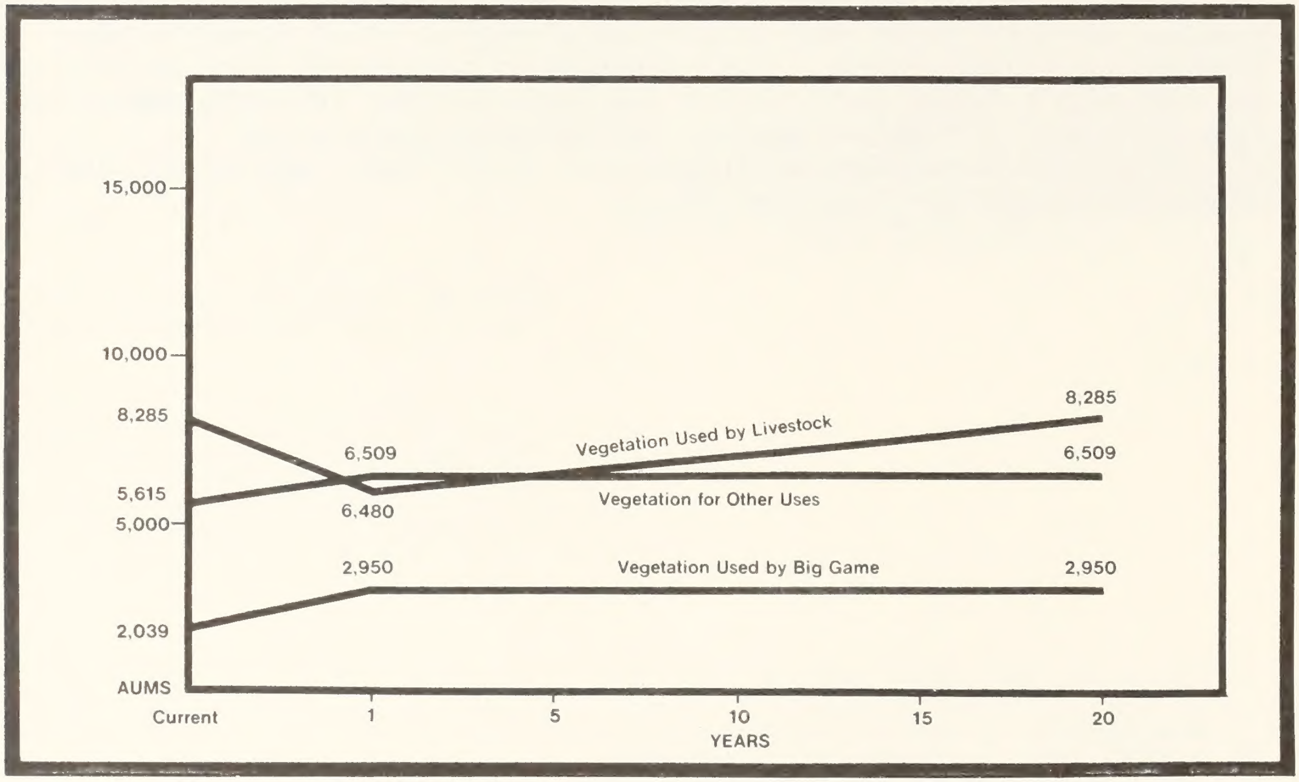
As many as 63 ranchers would be forced to sell their operations, and as many as 177 people may leave the area.

F. ADJUSTMENT OF USE ALTERNATIVE

1. Description of the Alternative

a. Purpose

This alternative would adjust utilization by livestock downward from the proposed level (60 percent) to allow continuing the current seasons of use and protect vegetation from the effects of spring grazing. Utilization of current years vegetation growth on key plant species would be adjusted on 15 allotments and would be managed under existing continuous-seasonal grazing. Utilization would be limited to 25 percent in the spring and 60 percent in the fall and winter on these allotments (126,314 acres). The livestock use which the alternative would allow of the planning unit's vegetation would be:



EXISTING AND ALTERNATIVE (ADJUSTMENT OF USE) VEGETATION USE

b. Components of the Alternative Action

The alternative would use five of the six components from the proposed action. The component which would change is the "Continue Existing Continuous-Seasonal Grazing (Spring, Fall, Winter)." That component would become "Continue Existing Countinuous-Seasonal Grazing With Adjustment of Utilization (Spring, Fall, Winter)." For an analysis of the other five components, refer to Chapters 1, 2, and 3. The assessments and conclusions included in the impact for analysis for this alternative cover all six components. The changed component involves 126,314 acres (59 percent of the planning unit). A detailed listing of existing and initial alternative statistics are included in Appendix VIII-5. The long-term use for the changed component would be the same as the initial use. The other five components' Long term use is shown in Appendix I-1. Overall, 41 percent of the forage would be allocated to livestock, 19 percent to wildlife, and 40 percent for other uses. The same range developments would be required as listed for the Continue Existing Continuous-Seasonal Grazing component described in Chapter One.

2. Support Requirements

Labor, development costs, administration, control of unauthorized use, monitoring, and implementation would be the same as described in Chapter One.

3. Design, Operation, and Maintentance Considerations for Development

Design, operation, and maintenance considerations for development would be as described in Chapter 1 for the proposed action.

4. Environment Impacts of the Alternative

Analysis indicates that there would be no significant impacts on climate, air quality, geology, topography, paleontological resources, and historical resources. Therefore these resources are not discussed further in this alternative. Other resource components are introduced and analysis procedures and assumptions given for each resource component.

The impact analysis assesses the impacts that would result from changing utilization on the changed component and the five other components in the proposed action (Chapter 3).

a. Soils

(1) Introduction

This section analyzes the impacts to the soils under the adjustment of use alternative. There would be an impact to sediment yield and soil erosion because the vegetation ground cover is expected to change.

ANALYSIS OF IMPACTS ON SEDIMENT YIELD

Impacts	Rationale
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF UTILIZATION (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit).	
The present sediment yield is estimated to be 79.8 acre-feet per year. The sediment yield would be reduced by as much as 12 acre-feet per year. These conditions are expected to remain constant for the next 20 years.	Sediment yield is a function of surface geology, soils, climate, runoff characteristics, topography, land use, upland erosion, channel erosion, and ground cover. The vegetation ground cover would increase from the current 17 percent to 23 percent.

ANALYSIS OF IMPACTS ON SOIL EROSION CONDITION

Impacts	Rationale
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF UTILIZATION (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit).	
The current soil erosion condition on the allotments are: 47 percent of the area is classified as stable, 51 percent of the area is classified as slight, and 2 percent of the area is classified as moderate.	Erosion condition is related to the amount of vegetation ground cover (Bentley and Eggleston, 1977). Since the vegetation ground cover is expected to increase from the current 17 percent to 23 percent, the erosion condition would improve.
Under this alternative, the stable condition would increase to 57 percent, the slight condition would be 41 percent, and the moderate condition would remain at 2 percent.	

(2) Assessment

The present sediment yield is estimated to be 79.8 acre-feet per year on 126,314 acres (59 percent of the planning unit). The sediment yield would be reduced by as much as 12 acre-feet per year on these allotments. The estimated sediment yield on 21,159 acres (10 percent of the planning unit) is 13 acre-feet per year and is expected to decrease by a total of 2 acre-feet per year over the next 20 years. Sediment yield is estimated to be 116 acre-feet per year on 54,294 acres (25 percent of the planning unit) and is expected to remain constant. On 10,543 acres (5 percent of the planning unit) sediment yield is estimated to be 35 acre-feet per year and is also expected to remain constant. Sediment yield is a function of surface geology, soils, climate, runoff characteristics, topography, land use, upland erosion, channel erosion, and vegetation ground cover. All of these factors would remain constant except for vegetation ground cover. A decrease in the vegetation ground cover would increase sediment yield and an increase in the vegetation ground cover would decrease sediment yield.

Soil erosion condition is also strongly related to the vegetation ground cover. The erosion condition on 126,314 acres (59 percent of the planning unit) would increase in the stable and slight classes.

On 21,159 acres (10 percent of the planning unit), most of the slight erosion class would improve to the stable class and most of the moderate class would improve to the slight class. On 54,294 acres (25 percent of the planning unit), the erosion condition would remain constant and on 10,543 acres (5 percent of the planning unit) the acreage in the stable, slight, and moderate conditions would increase.

(3) Conclusion

The proposal would decrease sediment yield on 70 percent of the planning unit and it would remain constant on 30 percent of the planning unit. This is due to the projected increase in vegetation ground cover.

Soil erosion conditions would also improve due to the increase in vegetation ground cover. On 70 percent of the planning unit, the soil erosion condition would be improved as shown in the following chart:

Erosion Condition Class	Present		Projected	
Stable	50,048	(47%)	61,023	(57%)
Slight	55,130	(51%)	43,814	(41%)
Moderate	1,880	(2%)	2,141	(2%)
Critical	0	(0%)	0	(0%)
Unclassified	0	(0%)	0	(0%)

b. Water Resources

(1) Introduction

This section analyzes the impacts on water quality and water quantity under te adjustment of use alternative. Water quantity would be affected in that runoff would decrease and infiltration would increase due to changes in the vegetation ground cover. The overall water quality would be improved since ground water contains less sediment, coliform, and other pollutants than surface runoff.

(2) Analysis of Impacts

The following shows the projected impacts to water quantity and quality and the rationale for the projections.

ANALYSIS OF IMPACTS ON WATER QUANTITY

Impacts	Rationale
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF UTILIZATION (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit).	
The present water yield from these allotments is 7,208 acre-feet per year. Surface runoff would decrease and infiltration would increase. Because of increased infiltration, ground water production is expected to increase. These conditions are expected to remain unchanged for the next 20 years. There would be no net change in water yield.	Animal grazing affects water yield by altering vegetation ground cover and soil compaction. Estimates show that the vegetation ground cover would not significantly change. A decrease in soil compaction would increase infiltration. Livestock consume 300 gallons of water per AUM (Stoddard and Smith, 1955). Under this component, the amount of AUMs provided for livestock would be reduced from 8,939 to 4,239.

ANALYSIS OF IMPACTS ON WATER QUALITY

Impacts	Rationale
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF UTILIZATION (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit).	
The present water quality would improve on these allotments. These conditions are expected to remain unchanged for the next 20 years.	Surface runoff would decrease and infiltration would increase. Surface runoff contains more sediment, coliform, and other surface pollutants than ground water. A reduction in surface runoff would improve water quality.

(3) Assessment

The estimated water yield from the planning unit is 9,232 acre-feet per year and is not expected to change in the next 20 years. The amounts of runoff would decrease where the vegetation ground cover increases and the amount of infiltration would decrease where the vegetation ground cover decreases. On 158,288 acres (74 percent of the planning unit), the vegetation ground cover is projected to increase and on 54,769 acres (26 percent of the planning unit), the vegetation ground cover is projected to remain constant.

Water quality would be altered as the amounts of runoff and infiltrations are altered. Surface runoff contains more sediment, coliform, and other pollutants than ground water. A reduction in surface runoff would improve the overall water quality by an unknown amount on 122,498 acres.

(4) Conclusion

Water quantity would not be significantly changed but runoff would decrease and infiltration and ground water production would increase. Overall water quality would improve due to decreased surface runoff and increased water infiltration.

c. Vegetation

(1) Introduction

This section describes the anticipated impacts which this alternative action would have upon vegetation on public lands in the planning unit. Impacts to vegetation are interrelated with impacts to animal life, livestock grazing, watershed, and visual resources.

Vegetation is divided into the following sub-categories for analysis in this section--types, subtypes, and riparian conditions; vegetation ground cover; key species and vegetation composition; threatened and endangered species; forage production; forage condition; and trend in forage condition.

Impacts upon each sub-category of the vegetation resource are analyzed separately, followed by an assessment of the impacts and a conclusion.

ANALYSIS OF IMPACTS ON TYPES AND SUBTYPES
(Including Riparian Vegetation and Condition)

Impacts	Rationale
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF UTILIZATION (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit).	
Present vegetation types are: Sagebrush - 103,176 acres - 81 percent; Grass - 17,748 acres - 14 percent; Pinyon-juniper - 5,238 acres - 4 percent; Broad-leaf tree - 131 acres - 1 percent; Riparian - 21 acres <1 percent; Condition: 11 acres-fair - Pine Creek, 10 acres-good - Riley Creek.	Grazing intensity under the alternative would decrease. This may cause a change in vegetation composition, but it is not expected to be enough to change any of the present types. Even though the actual level of livestock use would decrease, the grazing intensity on riparian vegetation is expected to remain about the same. This is because animals usually graze vegetation around water sources before they move elsewhere.
Vegetation types and riparian vegetation condition would not change.	

ANALYSIS OF IMPACTS ON VEGETATION GROUND COVER

Impacts	Rationale
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF UTILIZATION (Spring, Fall, Winter)	
Fifteen allotments 126,314 acres (59 percent of the planning unit).	
By implementing the alternative action, the present average vegetation ground cover of 16 percent would be increased to about 21 percent within 20 years.	Since livestock grazing intensity would be decreased from 60 percent to 25 percent during the critical spring growing period, an increase in vegetation ground cover would be expected. Cook (1971) found from studies in western Utah that 25 percent utilization would maintain optimum vigor and sustained yield of vegetation. Increased vegetation ground cover would result from improved vigor. Larger plants and more seed production would result.

ANALYSIS OF IMPACTS ON KEY SPECIES AND VEGETATION COMPOSITION

Impacts	Rationale
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF UTILIZATION (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit).	
Composition of key and other desirable plant species is predicted to increase by 10 to 15 percent within 20 years.	This alternative would limit utilization of key species to 25 percent of current annual growth. Plants would be better able to maintain optimum vigor and increase in abundance. Studies by Cook (1971) indicate that, under similar conditions in western Utah, desert plants can tolerate only about 25 percent utilization if grazed every spring. Utilization of current annual growth of key plant species on these allotments has averaged 60 percent every spring.

ANALYSIS OF IMPACTS ON THREATENED AND ENDANGERED PLANT SPECIES

Impacts	Rationale
ALL ALTERNATIVE COMPONENTS	
Fifteen allotments, 126,314 acres (59 percent of the planning unit).	
The impacts this alternative would have upon candidate and proposed threatened and endangered plant species in this planning unit are unknown, but it is expected that there would be very little if any impact.	According to BYU herbarium records (Welsh, 1976), two proposed endangered plant species (Federal Register June 16, 1976) and two candidate threatened plant species (Welsh, 1978); have been collected within the Parker Mountain Planning Unit. Critical habitat for these plant species has not been determined and the extent of their individual populations is unknown. Any type of vegetation management could have some effect upon threatened or endangered plant species. Because these species are not well known, their response to various types of vegetation management cannot be determined at this time.

ANALYSIS OF IMPACTS ON FORAGE PRODUCTION

Impacts	Rationale
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF UTILIZATION (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit).	
Forage production is expected to increase by 10 to 15 percent within 20 years. Present production is 12,349 AUMs.	This alternative would limit spring utilization to 25 percent of current annual growth, thereby improving conditions for increasing abundance by improving vigor and reproductive capacity of key and other desirable range forage plants. Studies by Cook (1971) indicate that, under similar conditions in western Utah, desert plants can tolerate only about 25 percent utilization if grazed every spring. Utilization of current annual growth of key plant species on these allotments has averaged 60 percent every spring. The results of over-utilization during the critical spring growth and reproduction period, is that the abundance of the most productive range forage plants has been reduced. Cook (1971) has also shown that, by limiting spring utilization to 25 percent of current annual growth, production can increase. Cook measured a 13 percent increase in production over a six year period in his studies in western Utah and professional BLM range conservationists expect at least the same increase in production on these allotments.

ANALYSIS OF IMPCTS ON FORAGE CONDITION

Impacts	Rationale
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF UTILIZATION (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit).	
The present forage conditions of good on 99,489 acres (79 percent), fair on 21,782 acres (17 percent), and poor on 5,043 acres (4 percent) is expected to improve. The amount of improvement is unknown.	This alternative would limit utilization of key species to 25 percent of current annual growth. Plants would be better able to maintain optimum vigor and increase in abundance. Studies by Cook (1971) indicate that, under similar conditions in western Utah, desert plants can tolerate only about 25 percent utilization if grazed every spring. Utilization of current annual growth of key plant species on these allotments has averaged 60 percent every spring. As key species increase, forage condition improves. Though forage condition may improve, it may not, in all cases, improve to a point that forage condition class would change--i.e. from fair to good. Any change in forage condition class would depend on the present key species composition and soil surface factors.

ANALYSIS OF IMPACTS ON FORAGE CONDITION TREND

Impacts	Rationale
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF UTILIZATION (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit).	
The current downward trend in forage condition is expected to improve initially (with normal precipitation) and continue to improve gradually for 20 years.	The downward trend in forage condition on these allotments is probably due to lack of precipitation. Precipitation has been less than average for the past 6 years (NOAA, 1973 to 1978). It is expected that forage condition trend would improve initially, after a few years of normal precipitation. The increases in key species that are predicted as a result of reduced livestock grazing in the spring are expected to continue to improve the trend (Cook, 1971).

(2) Assessment

Over-utilization of key species (60 percent or greater) during the critical spring growth and reproduction period of the desirable forage plants has reduced some of these plants to very low levels in the total vegetation composition. Because of this and 6 years of lower than average precipitation, present trend in forage condition is down. Studies by Cook (1971) indicate that, under similar conditions in western Utah, desert plants can tolerate only about 25 percent utilization if grazed every spring. The proposed action allows grazing every spring, across the whole unit, at a 60 percent utilization level.

This alternative would limit spring utilization to 25 percent and fall utilization to 60 percent of current annual growth on 59 percent of the unit. Unit conditions would improve somewhat by an increase in abundance of key and other desirable range forage plants. Vigor and reproductive capacity would increase. Cover distribution should slowly increase also.

It is expected that, over a 20 year period, key species would respond by increasing on all allotments. The expected amount of increase would probably average at least 15 percent. Where key species are only at trace levels, or only 1 or 2 percent of total composition, increases are expected to be greater.

Cook (1971) has also shown that by limiting spring utilization to 25 percent of current annual growth, forage production can increase. A 13 percent increase in production over a 6 year period was found in his studies in western Utah. It is judged that the unit can expect at least the same increase in production on these allotments because conditions are similar.

Implementation of this alternative would not change any vegetation types or sub-types within a 20 year period because projected changes in composition would not be enough for any type to be re-classified.

Current forage condition, which is an overall indicator of vegetation condition, is "good" on 99,489 acres "fair" on 21,782 acres, and "poor" on 5,043 acres.

As key species increase, forage condition improves. Though forage condition may improve, it may not in all cases improve to the point at which forage condition class would change, e.g., from fair to good. Any change in forage condition class would depend upon the present key species composition in that allotment and upon soil surface factors.

Under this alternative, management would only be changed for one component, on 126,314 acres (59 percent of the planning unit). For the remaining five components (86,743 acres, 41 percent of the planning unit), proposed management would be as described in Chapter 1. The analysis, assessment, and conclusions regarding vegetation (Chapter 3) for the remaining 5 components also remains the same under this alternative. Nothing proposed for the five components would substantially contribute to improving the growth of plants.

(3) Conclusion

The vegetation would slowly improve in condition on about 59 percent of the unit. The acreage changed cannot be accurately determined. However, improvement could reasonably be expected to produce a point of relative stability and unit-wide dominance within 30 years.

d. Animal Life

(1) Introduction

This section describes the impacts of the alternative on mule deer, elk, antelope, sage grouse, the endangered Utah prairie dog, and fish. Analysis indicates that other species of wildlife found in the planning unit would not be significantly affected by this alternative and are not discussed in this section.

ANALYSIS OF IMPACTS ON MULE DEER

Impacts	Rationale
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH ADJUSTEMENT OF UTILIZATION (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit).	
The initial allocation for deer would remain the same as the estimated present use on Post Hollow, Fishlake, and Cedar Grove allotments. It would be increased by 440 AUMs in the remaining allotments. There would be no further increase allowed for the long term. This would provide for an increase of 117 deer for summer use and 328 deer for winter use. Those increases would be added to the base of 94 summer and 256 winter deer. Total deer numbers (795) in the component would become 584 winter deer and 211 summer deer. Forage would be sufficient for deer for about 5 years after which an adjustment of numbers could be needed as the carrying capacity of the winter range would be stressed as deer numbers increase.	There are presently 413 deer AUMs available in this component and the alternative would allow for a total of 853 AUMs. It would also reduce livestock grazing during periods critical to plant growth and reproduction. (Livestock actual use average 67 percent of allocation between 1975-1977.) This would mean that utilization of important forage species would decrease during critical periods by implementing the alternative. This should cause an increase of these species (Cook, 1971) and an increase in forage production. However, deer numbers are increasing and if they increase to the levels of the recent past, they would exceed the AUMs alloted to them.

ANALYSIS OF IMPACTS ON ELK

Impacts	Rationale
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF UTILIZATION (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit).	
One hundred-eighty elk presently use the following seven allotments under this component: Bicknell Spring, Cedar Peak, Cedar Grove, Cyclone Co-op, Co-op, Cyclone, and Fishlake. The largest amount of elk use (65 percent) occurs on the Cedar Grove Allotment. An increase of 111 AUMs would provide for an additional 42 elk. The additional elk would be part of the newly established Boulder Mountain herd and would use the Hare Lake and Smooth Knoll and part of the Bicknell Spring and Cedar Peak allotments during the winter. Elk would then use nine allotments (81,963 acres or 38 percent of the planning unit) under this component. Forage available for elk use would increase and no adjustments in numbers would be required.	These allotments would have sufficient wildlife AUMs and adequate forage as provided by the alternative. However, the alternative would reduce livestock grazing during periods critical to growth and reproduction of the plants. (Livestock actual use averaged 67 percent of allocation between 1975-1977.) This would mean that utilization of important forage species would decrease during critical periods by implementing the alternative. This would cause an increase of these species (Cook, 1971) and a increase in forage production.

ANALYSIS OF IMPACTS ON ANTELOPE

Impacts	Rationale
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF UTILIZATION (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit). All allotments except Lyman and Hector Hollow support antelope.	
Antelope inhabit 13 of these 15 allotments (122,275 acres of 57 percent of the planning unit). The proposal provides for antelope to continue to use 460 AUMs. Additional water sources would provide more water for antelope use. Forage available to antelope would increase during the initial 5 years of the alternative and adjustments in numbers would not be required.	The proposed pipelines, water troughs, reservoirs modifications, and new reservoirs would provide new and more reliable sources of water for antelope. The alternative would reduce livestock grazing during periods critical to growth and reproduction of plants. This would mean that utilization of important forage species would decrease during critical periods by implementing the alternative. This would cause an increase of these species (Cook, 1971) and forage production.

ANALYSIS OF IMPACTS ON SAGE GROUSE

Impacts	Rationale
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF UTILIZATION (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit). All allotments except Lyman and Hector Hollow support sage grouse.	
Sage grouse inhabit 13 of these 15 allotments (122,275 acres or 38 percent of the planning unit). Sage grouse numbers would increase. The extent and magnitude are unknown.	Decreased grazing during the spring would increase key and other desirable forage species and beneficially affect vegetation needed for sage grouse. Succulent green forage is critical during the brooding season (Jarvis, 1974). With increased succulent forage, the survival rate of sage grouse chicks would increase.

ANALYSIS OF IMPACTS ON ENDANGERED UTAH PRAIRIE DOG

Impacts	Rationale
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF UTILIZATION (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit). Utah prairie dogs are found on the Cedar Grove, Cyclone Co-op, Cyclone, Co-op, Bicknell Spring, Cedar Peak, Hare Lake, Smooth Knoll, Flat Top, and Bicknell Winter allotments (98,399 acres or 46 percent of the planning unit).	
Utah prairie dogs numbers would increase. The magnitude is unknown, but would be significant.	Decreased grazing would increase key and other desirable forage species and affect vegetation that is needed by prairie dogs during the critical lactating period (Crocker-Bedford, et al., 1975).

ANALYSIS OF IMPACTS ON FISH

Impacts	Rationale
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF UTILIZATION (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit).	
Only two streams which support fisheries (Pine and Riley creeks) are included in this component. Impacts would be the same as under the proposed action.	Because adjustment of utilization would not affect fish habitat appreciably, impacts upon fish production can be expected to be the same as under the proposed action.

(2) Assessment

Deer

The alternative action continues heavy utilization of key deer winter forage (particularaly shrub species) on 65,109 acres (31 percent of the planning unit) where composition of key (bitterbrush and fourwing saltbush) and other desirable plant species is expected to decline. Of this area, 17,946 acres (8 percent), there would be an initial deficit of 85 AUMs (equivalent to 95 deer). In this area, overutilization of the crucial winter habitat would occur immediately. On the remaining 147,948 acres (69 percent of the planning unit), deer winter and spring ranges are expected to improve.

The present deer population on 195,111 acres (about 92 percent of the unit) is estimated to be 996. They utilize 946 AUMs annually. The plan provides for this plus an additional 1,211 AUMs. This would accomodate about 1,356 more deer for a total winter population of 2,568.

Mule deer (about 4,013) throughout the unit utilized about 4,242 AUMs in the past and is expected to reach that level in the next 5 years (Bowden, 1979). Thus in the total unit area there would be about 1,819 less AUMs available than deer needs projected by UDWR within the next 5 years. Deer winter range on 31 percent of the unit would rapidly begin to decline because carrying capacity would be exceeded by winter livestock and deer use. The stressed deer herd would conflict with livestock and a consequent deer weight loss, low fawn survival rate or die off would occur. The remaining 69 percent would improve until deer reach higher numbers (after about 5 years) at which time their carrying capacity would probably be exceeded. The conflict between winter livestock use and the increasing deer herd would prevent the realization of the number of deer projected to be using the area by 1985.

Spring and summer ranges on 126,314 acres or 59 percent of the planning unit would improve considerably. However, as spring and summer range is not the limiting factor for deer in this planning unit, the improvement would not significantly affect deer numbers.

Elk

The alternative action provides for an increased forage allocation of 111 AUMs on 31,257 acres (15 percent of the planning unit) for winter use for 42 elk from the new elk herd on the Boulder Mountains. Sufficient vegetation (406 AUMs) would be provided for the 220 existing and the 42 additional elk. These 406 AUMs also meet the projected long term needs for elk on public land in the unit. The improvemnt of spring and winter forage on 126,314 or 59 percent of the planning unit, combined with improvement of elk range on the Seven Mile Allotment (21,159 acres) would also enhance elk range. No future expansion of the elk herd in these areas are predicted, however, and the impacts to elk would be insignificant.

Antelope

The alternative action provides vegetation allocation (617 AUMs) sufficient for current antelope (750 animals) use. New water developments and the pinyon-juniper chaining would improve antelope habitat, and the proposed improvement in the vegetation on 122,275 acres (57 percent of the planning unit) of antelope spring range is expected to enhance the carrying capacity. The expected increase in key plant species on the 54,294 acres (25 percent of the planning unit) antelope winter range would also improve the quality of this crucial area.

Sage Grouse

Improvement of key and other desirable plant species in the spring, during nesting and the critical brooding period, would beneficially affect young sage grouse survival on 125,875 acres (59 percent of the public land in the planning unit). Sage grouse nesting occurs from mid-April to early June (Jarvis, 1974). If disturbed, sage grouse hens sometimes abandon their nests during egg laying and incubation. Less livestock use prior to June 15th would result in less disturbance of nesting hens and thus improve nesting success. Reduced grazing during the critical growing season of key plant species and other succulent forage would cause an increase in these plant species which are a necessary factor to chick survival after hatching. The amount of expected sage grouse increase is unknown. The improved water conditions would also likely be beneficial to sage grouse.

Endangered Utah Prairie Dog

The key to survival for this endangered species is to have cool season grasses available during lactation period and cool season grasses and other succulent vegetation available as soon as the young start leaving their burrows. Reduced livestock grazing during the spring period would result in less competition between livestock and prairie dogs for succulent vegetation. This would permit expansion of existing colonies, establishment of satellite colonies, and would reduce losses of animals during periods of stress such as drought. The increase of key species and other succulent vegetation species would also require praire dogs to forage less distance from the protection of their burrows, making them less susceptible to predation.

Fish

The quantity or quality of water is not predicted to change as vegetation ground cover would remain essentially unchanged. Numerous studies show that cattle trampling and concentrating along stream banks cause overhanging banks to break-off and cover to be suppressed. Shade along creek banks is reduced which lowers the quality of fish habitat and curtails fish production and growth. The fisheries habitat condition would be expected to change as shown below:

Approximate Miles in Habitat Condition Class

	Good	Fair	Poor
Present	4	6	1
Predicted in 20 years	0	5	7

(3) Conclusions

Big game allocation is summarized below:

		Current Use		Initial Allocation		Long-Term Projected Need	
		Number	AUMs	Number	AUMs	Number	AUMs
Deer	Summer	109	1,127	238	1,927	4,013	4,242
	Winter	1,103		1,930			
Antelope	Summer	394	617	394	617	750	617
	Winter	750		750			
Elk	Summer	20	295	20	406	262	406
	Winter	200		242			

On 8 percent of the planning unit (17,946 acres), overuse of the existing vegetation would occur and existing wintering deer numbers would not be supported. This would result in an immediate reduction of vegetation on those winter ranges with a resulting deer die off.

Within 5 years, because of the projected increase in the deer population and in spite of the projected increase in vegetation, the carrying capacity on most deer winter ranges in the planning unit would be reached. This would result in an inadequate forage supply for the number of deer proposed by the BLM MFP and required by UDWR (Bowden, 1979).

Elk

A projected increase in key forage species is predicted for elk use areas. The impact upon this mobile and migratory herd is unquantifiable, but would not be signficant.

Antelope

A predicted increase in vegetation key species in both summer and winter ranges for antelope would result in improved carrying capacity of the winter range.

Sage Grouse

Sage grouse numbers would increase above existing numbers as vigor of key and desirable plants, and vegetation ground cover increase throughout the sage grouse crucial nesting brooding and winter range. The magnitude is unknown.

Endangered Utah Prairie Dog

The survival rate of Utah prairie dog litters would be improved which would cause an increase in prairie dog populations or an acceleration in the population growth rate. Insufficient data are available to determine the extent of impacts. A U.S. Fish and Wildlife Service (USFWS) formal biological opinion has been requested on this matter and will be included in the final environmental statement. A copy of an informal consultation is included in Chapter 9.

Fish

The quantity and quality of trout fisheries would deteriorate on approximately 11 miles of streams where livestock would continue to graze riparian habitat.

e. Archaeological Resources

(1) Introduction

This section analyzes the impacts that this alternative action would have on archaeological resources.

(2) Analysis of Impacts

The following table shows the probable impacts and rationale for predicting these impacts on archaeology.

ANALYSIS OF IMPACTS ON ARCHAEOLOGICAL RESOURCES

Impacts	Rationale
ALL COMPONENTS OF THE ALTERNATIVE	
Fifteen allotments, 126,314 acres (59 percent of the planning unit)	
Range developments would cause ground disturbance on approximately 11 acres. One site has been recorded in one allotment in the planning unit. Little or no archaeological inventory has been done in the remaining allotments, but additional sites are assumed to exist in the area. The range developments involve ground-disturbing actions resulting from the construction and use of pipelines, water troughs, and reservoirs. The specific causes of adverse impacts to archaeological resources are the ground-disturbing actions during construction, livestock trampling around water troughs, and inundation of areas due to reservoirs. Even with the implementation of proposed mitigation, ground-disturbing actions could inadvertently damage or destroy archaeological resources resulting in a loss of scientific and educational information.	Experience has shown that even with implementation of design features and required inventories, as described as part of the proposal, accidental losses of archaeological remains could occur.

(3) Overall Assessment

Twenty-three sites have been recorded on seven allotments within the planning unit. Limited archaeological resource inventory has been done on the remaining allotments, but additional sites are assumed to exist in the area. Even with the implementation of proposed mitigation, ground-disturbing actions could inadvertently damage or destroy cultural resources on approximately 4,840 acres, resulting in a loss of scientific and educational information. These ground-disturbing actions involve construction activities, livestock trampling around water sources, and inundation of areas due to reservoirs.

The intensive archaeological resource inventory required by mitigation would be a beneficial impact to the resource as it would result in the recordation and documentation of preveiously unknown areas and sites.

(4) Conclusions

There could be inadvertent loss to archaeological resources. The extent is unknown. Some beneficial effects would be realized as archaeological materials and sites may be found as a result of mandatory surveys prior to implementing range developments.

f. Visual Resources

(1) Introduction

This section describes the anticipated impacts this alternative would have on visual resources (as defined in Visual Resource Management Class areas) within the Parker Mountain Planning Unit.

(2) Analysis of Impacts

The following table shows the possible impacts and rationale for projecting the impacts to visual resources.

ANALYSIS OF IMPACTS ON VISUAL RESOURCES

Impacts	Rationale
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF UTILIZATION (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit).	
Only the following 11 allotments would be affected: Bicknell Spring, Cedar Peak, Hare Lake, Smooth Knoll, Bicknell Winter, Flat Top, Cedar Grove, Cyclone Co-op, Co-op, Cyclone, and Post Hollow. These allotments total 107,080 acres (50 percent of the planning unit).	Vegetation and ground disturbance and/or the presence of structures resulting from the modification of 25 reservoirs and construction of two reservoirs, 8 miles of pipeline, and five water troughs, would cause a visual modification that would not exceed acceptable landscape feature modification for VRM Class III and IV areas. (See Appendix III-2).
All range developments would be located in Visual Resource Management (VRM) Class III or IV areas. In all cases, the visual modification would be compatible with the management objective for the VRM Class in which it would occur.	

(3) Overall Assessment

Range developments would be the source of impact to the visual resource. Vegetation and ground disturbance or the presence of structures resulting from the modification of 30 reservoirs and construction of four new reservoirs, 16 miles of pipeline, 15 miles of fencing, nine water troughs, 4,800 acres of chaining, and three exclosures would cause a visual modification of the landscape.

All but one range developments would be located in Visual Resource Management (VRM) Class III or IV areas. The visual modifications would be compatible with VRM management objectives (see Appendix III-2). The exclosure proposed on the Donkey Hill Allotment would be located in a VRM Class II or III area. Thie visual modification would not be compatible with VRM Class II management objectives, but would be compatible with VRM Class III management objectives.

(4) Conclusions

The only adverse impact to visual resources would occur if the exclosure on the Donkey Hill Allotment is located in a VRM Class II area. Visual modification from the exclosure would not be compatible with VRM Class II management objectives. In all other cases, the visual modification from range developments would be compatible with VRM management objectives.

g. Recreation

(1) Introduction

This section describes the anticipated impacts the adjustment of use alternative would have on hunting and fishing opportunities (i.e., quality and number of deer, elk, antelope, and sage grouse hunter days, and trout fisherman days) presently provided by the Parker Mountain Planning Unit.

(2) Analysis of Impacts

The following table shows the anticipated changes and the rationale for predicting these changes that would occur to hunting and fishing opportunities.

ANALYSIS OF IMPACTS ON RECREATION

Impacts	Rationale
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF UTILIZATION (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit).	
Deer Hunting	
All allotments under this compoent would be affected. This would include 126,314 acres (59 percent of the planning unit).	
With the present hunter success ratio, the potential increase in deer numbers would provide for 4,959 additional hunter days initially and over the long term, above the 4,655 hunter days presently provided by the allotments within this component.	Hunting demand for deer is high. Historically in the area any increase in deer has resulted in an increase in hunter success, attracting more hunters to the area and resulting in an increase in hunter days (UDWR, 1978). In this component, the alternative would allocate 440 additional AUMs for deer initially and over the long term above the current estimated use, resulting in a potential increase in deer.
Antelope Hunting	
Under this component, the following 13 allotments would be affected: Bicknell Spring, Cedar Peak, Hare Lake, Smooth Knoll, Bicknell Winter, Flat Top, King Sheep, Cedar Grove, Cyclone Co-op, Co-op, Cyclone, Fishlake, and Post Hollow. This would include 122,275 acres (57 percent of the planning unit).	
The Adjustment of Use Alternative would not impact antelope hunting opportunities (117 hunter days) presently provided by the allotments within this component.	Hunting demand for antelope is high. Historically in the area any increase or decrease in antelope has resulted in an increase or decrease in available hunting permits and hunter days (UDWR, 1978). The alternative would not change the AUMs currently allocated for antelope, and would have no affect on antelope numbers.
Elk Hunting	
Under this component, the following nine allotments would be affected: Bicknell Spring, Cedar Peak, Hare Lake, Smooth Knoll, Cedar Grove, Cyclone-Co-op, Cyclone, Co op, and Fishlake. This would include 81,963 acres (38 percent of the planning unit).	
With the present hunter success ratio, the potential increase in elk numbers would provide for 339 additional hunter days initially and over the long-term, above the 911 hunter days presently provided by allotments within this component.	Hunting demand for elk is high. Historically in the area any increase in elk has resulted in an increase in available hunting permits and hunter days (UDWR, 1978). In this compoment, the alternative would allocate 111 additional AUMs for elk initially and over the long-term above the current estimated use, resulting in a potential increase in elk.

ANALYSIS OF IMPACTS ON RECREATION (concluded)

Impacts	Rationale
Sage Grouse Hunting	
Under this component, the following 13 allotments would be affected: Bicknell Spring, Cedar Peak, Hare Lake, Smooth Knoll, Bicknell Winter, Flat Top, King Sheep, Cedar Grove, Cyclone Co-op, Cyclone, Co-op, Fishlake, and Post Hollow. This would include 122,275 acres, (57 percent of the planning unit).	
The alternative would result in an unquantified increase in quality and number of hunter days above the 1,119 sage grouse hunter days presently provided by the planning unit.	Hunting demand for sage grouse is high. Historically in the area, any decrease in sage grouse has resulted in a decrease in hunter success, attracting less hunters to the area and resulting in a decrease in hunter days (UDWR, 1976). The alternative would result in an unquantified increase in sage grouse numbers on all affected allotments.
Trout Fishing	
Under this component, the King Sheep and Post Hollow allotments would be affected.	
The alternative would result in an unquantified decrease in quality and number of fisherman days provided by Pine Creek and Riley Creek. Overall, this alternative would result in an unquantified decrease in quality and number of fisherman days below the 3,000 fisherman days presently provided by the planning unit.	Any decrease in trout production (number and size) would result in a decrease in fisherman success, attracting less fishermen to the area, resulting in a decrease in fisherman days. The alternative would continue an unquantified decline in trout production in all fisheries except Mill Meadow Reservoir, Pine Creek, and Riley Creek.

(3) Overall Assessment

The basis of impacts on recreation would include any change in management or allocation that would alter numbers of deer, antelope, elk, and sage grouse available for hunting and trout available for fishing.

The analysis assumes that with present numbers of game and fish, the planning unit is providing a certain amount of hunter-fisherman success, which results in the present number of hunter-fisherman days. Hunting and fishing demand is high. With any increase or decrease in game and fish numbers, the planning unit would provide for a corresponding increase or decrease in hunter-fisherman success and days.

With the present hunter success ratio, the potential increase in deer numbers resulting from the change in allocation would provide for 9,016 additional deer hunter days initially and 13,355 additional deer hunter days (12,701 hunter days presently). The potential increase in elk numbers resulting from the change in allocation would provide for 339 additional elk hunter days initially and over the long-term (911 hunter days presently). A potential increase in sage grouse numbers would result in an unquantified increase in sage grouse hunting success and sage grouse hunter days (1,119 hunter days presently). The alternative would not affect existing antelope numbers and would not impact existing antelope hunting opportunities.

The alternative would result in an unquantified decrease in quality and number of fisherman days provided by Pine Creek, Riley Creek, the Fremont River, Road Creek, and Fish Creek. Fishing opportunities provided by Mill Meadow Reservoir would not be impacted. Overall, this alternative would continue an unquantified decline in quality and number of fisherman days (3,000 fisherman days presently).

(4) Conclusions

As a result of this alternative, recreation values within the Parker Mountain Planning Unit would be affected as follows: 1) 9,016 additional deer hunter days initially and 13,355 additional deer hunter days over the long-term (12,701 hunter days presently); 2) 339 additional elk hunter days initially and over the long-term (911 hunter days presently); 3) no change from the 117 antelope hunter days presently provided; 4) an unquantified increase in sage grouse hunting success and resultant hunter days (1,119 hunter days presently); and 5) an unquantified decrease in fisherman success and resultant fisherman days (3,000 fisherman days presently).

h. Impacts on Livestock Grazing

(1) Introduction

This section describes the anticipated impacts the alternative would have on livestock grazing. Major impacts would result from loss of AUMs and could require certain operators to purchase supplementary feed for their livestock.

ANALYSIS OF IMPACTS ON LIVESTOCK GRAZING

Impacts	Rationale
CONTINUE EXISITNG CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF UTILIZATION (Fall, Winter, Spring)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit).	
This component would involve 69 separate livestock operators. Livestock grazing would be reduced by approximately 53 percent for 20 years. The 69 livestock operators that would be affected may need to obtain additional feed for their livestock or alter their operation.	Experience has shown that livestock operators in this area are more likely to obtain additional feed from other sources to continue their yearly operations rather than sell. This probably results from the users' strong historical ties to the livestock industry and the geographic area.

(2) Overall Assessment

Sixty-nine livestock operators would have livestock grazing allocations reduced by an average of 53 percent. The reduction in grazing would directly impact economics and vegetation. Soil, water, wildlife, and recreation would be indirectly impacted.

The livestock operators that would have allocations reduced, would likely obtain additional feed in order to continue their annual operation rather than sell it. This would probably result from the user's strong historical ties to the livestock industry and the geographic area.

(3) Conclusions

Livestock grazing on the planning unit would be reduced 53 percent. Sixty-nine livestock operators on the planning unit would be affected by the reduction and would have to alter their operation.

i. Wilderness

(1) Introduction

This section describes the anticipated impacts this alternative would have on wilderness values (i.e., on roadless inventory units presently undergoing wilderness review) within the Parker Mountain Planning Unit.

(2) Analysis of Impacts

The following table shows the possible impacts and rationale for predicting impacts to wilderness values.

ANALYSIS OF IMPACTS ON WILDERNESS

Impacts	Rationale
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF UTILIZATION (Spring, Fall, Winter)	
Fifteen allotments, 126,314 acres (59 percent of the planning unit).	
Only portions of the following eight allotments would be affected: Bicknell Spring, Hare Lake, Smooth Knoll, Bicknell Winter, Flat Top, Cedar Grove, Cyclone Co-op, and Co-op. The area involved includes approximately 57,489 acres (27 percent of the planning unit).	
No impairment of wilderness suitability from proposed range developments would occur in the eleven roadless inventory units presently undergoing wilderness review.	New range developments (including two reservoirs, eight miles of pipeline and five water troughs) are proposed on 57,489 acres of roadless units undergoing wilderness review. The developments would be man-made intrusions that would detract from naturalness and could affect the suitability of an area for Congressional wilderness designation. Easily removable or visually unobtrusive range developments such as water troughs and pipelines would probably not impair wilderness suitability. Permanent, visually obvious range developments such as large reservoirs could impair wilderness suitability. No range development determined to impair wilderness suitability could be authorized within a roadless inventory unit undergoing wilderness review (Draft Interim Management Policy and Guildelines for Wilderness Study Areas, 1979).

(3) Overall Assessment

Of the range developments proposed under this alternative, two reservoirs, 8 miles of pipeline, 6 miles of fencing, four water troughs, and one exclosure would be located within 72,185 acres of roadless inventory units undergoing wilderness review. BLM policy and regulations prohibit new range developments that would impair a roadless inventory unit's suitability for wilderness designation while the unit is undergoing wilderness review. Permanent, obvious developments which would affect an area's naturalness would also affect its suitability for designation and would not be authorized unless BLM first determines that the area lacks wilderness character. Any areas that BLM determined to have wilderness character would require congressional action before developments affecting wilderness suitability could be authorized. No developments which would impair wilderness suitability would be authorized within the roadless units until they are released from the wilderness review process.

(4) Conclusion

The alternative would not affect wilderness designation suitability within the planning unit.

j. Economics

(1) Introduction

The alternative action would reduce the proposed 11,180 AUMs to 6,480 AUMs. This represents a reduction of 22 percent from the existing use of 8,285 animal-unit months. Two scenarios are analyzed under income impacts. The first considers a change in herd size and, in the second, the herd size is constant and the effect of purchasing additional feed is assessed.

(2) Analysis of Impacts

The specific impacts on operators are identified by assessing changes in dollars per AU for cash receipts, cash expenses, and net income from the 50 percent reduction alternative and then applying a factor to each to obtain a figure for this alternative. This is done for three scales of operation: small, medium, and large.

The regional economic impacts are separated into direct (that is, the impacts on the range livestock industry itself), secondary (impacts on other sectors), and total impacts. The impacts include changes in output and earnings. An estimate is also made of the impact on state income tax, sales taxes for local sales, and property taxes.

ANALYSIS OF IMPACTS OF "HERD CHANGE" ON RANCH INCOME

Impacts

Operator Impacts: change in Dollars per AU

Scale of Operation

	Small	Medium	Large
Cash Receipts	$-12.04	$-7.08	$-9.99
Cash Expenses	- 6.36	-1.70	-2.09
Net Return	- 5.68	-5.38	-7.90
Net Return per Ranch	$-343	$-563	$-1,781
Change in Wealth position	$-214	$-155	$-466

Regional Economic Impacts:

	Direct	Indirect	Total
Output	$-79,537	$-97,062	$-176,599
Earnings	-21,750	-38,647	- 60,400

Public Sector Impacts

	State
Sales Tax	$-2,077
Income Tax	$-3,685

	Local
Sales Tax	$- 395
Property Tax	$- 422

Rationale

Due to the fact that the livestock allocation under this alternative is below present use levels, the average operator in all three categories would lose feed on the planning unit.

Under this scenario, the alternative would have the effect of reducing cash receipts, cash expenses, and net returns.

The effect of the decreased net income is relfected in the other local economic impacts and the public sector impacts.

Due to the actual loss of AUMs by the operators, all three ranch sizes also showed reductions in their wealth position.

ANALYSIS OF IMPACTS OF "FEED CHANGE" ON RANCH INCOME

Impacts

Operator Impacts: Change in Dollars per AU:

	Size of Operation		
	Small	Medium	Large
Cash Receipts	--	--	--
Cash Expenses	$+3.91	$+1.47	$+1.92
Net Returns	-3.91	-1.47	-1.92
Net Returns per Ranch	$-236	$-153	$-603
Change in Wealth Positions	$-214	$-155	$-466

Local Economic Impacts:

Change in total earnings in range livestock sector	$-73,030

Other Impacts:

Change in Hay Purchases	$+67,689
Change in Government fees	- 5,561
Change in non-fee grazing costs	-20,307
Change in feeding costs	+ 5,415

Public Sector Impacts

	State
Sales Tax	$-2,990
Income Tax	$-4,455

	Local
Sales Tax	$-479

Rationale

Due to the fact that the livestock allocation under this alternative is below present use levels, the average operator in all three categories would lose feed on the planning unit.

The effect of this on all ranch sizes would be to increase ranch expenses per AU with no effect on cash receipts.

The effect of the increased costs and decreased net income is reflected in the other local economic impacts and the public sector impacts.

Due to the actual loss of AUMs by the operators, all three ranch sizes also showed reductions in their wealth positions.

ANALYSIS OF IMPACTS ON INCOME FROM HUNTING BIG GAME

Impacts

Income from Big Game Hunting

State and Local Economy

Expenditures from big game hunting would increase from the present estimated gross of $376,800 to about $594,000. This would represent a 58 percent increase.

This would mean an estimated net increase to the State and Wayne County of $69,090 above the projected net big game income without this alternative.

Rationale

These figures are based on the number of hunter days used in the recreation section of this alternative. Hunter-day and multiplier values were obtained from the BLM Parker Mountain Planning Documents (1978) and are as follows:

Elk hunter-day	-	$54.00
Deer hunter-day	-	25.00
Antelope hunter-day	-	57.00
Direct and indirect income multiplier	-	1.875

(3) Overall Assessment

Present net cash income per AU for small, medium, and large operators is $70.35, $43,51, and $56.43 respectively. Net ranch income is $42.68 for small, 45.54 for medium, and $148.98 for large size operations.

It is estimated that this alternative would produce the following changes in average ranch income:

	Net Ranch Income		
	Change	Total	Percent Change
Feed Change Scenario			
Small	$-236	$4,032	-9.4
Medium	$-153	$4,401	-9.7
Large	$-603	$14,295	-4.0
Herd Change Scenario			
Small	$-343	$3,925	-8.0
Medium	$-563	$3,991	-12.4
Large	$-1,781	$13,117	-12.0

In both scenarios the loss of AUMs would represent a decreased wealth position of $214, $155, and $466 for the small, medium, and large operator, respecitvely.

Regional economic impacts under the "feed change" scenario include a $73,030 decrease in total earnings for the range livestock sector and $202,814 in total earnings for the county, a loss of sales and income tax for revenues to the state of about $7,445, and a loss of $479 in local sales tax revenues.

Under the "herd change" scenario, regional impacts would be: a decline of $21,750 in earnings from the range livestock sector and $60,400 in total earnings; about $5,760 of lost sales and income tax revenue to the state; and an estimated loss of $820 sales and property taxes to the local economy.

The local economy lacks economic diversity, therefore, noticeable decreases in the livestock sector are more keenly felt and in the other sectors. It should also be recognized that impacts to individual livestock operators may vary widely from those indicated by this study.

(4) Conclusion

Implementation of this alternative would have a significant negative impact on the operators (4 to 12 percent decrease in ranch income) and the local economy (an 11 percent to 38 percent decrease in Wayne County total earnings).

k. Sociology

(1) Introduction

This section describes the anticipated impacts on the social conditions. Only population, attitudes, and expectations would be affected.

(2) Analysis of Impacts

The following table shows the probable impacts and rationale for projecting the impacts on attitudes and expectations.

ANALYSIS OF IMPACTS ON SOCIOLOGY

Impacts	Rationale
People in all of Wayne County and in the Grass Valley portions of Sevier and Piute Counties would be affected.	
Attitudes and Expectations	
The reduction of livestock forage from 12,997 AUMs to 6,480 AUMs (50 percent) would be highly resented and would surely lead to litigation. This alternative would allow wildlife use to increase from 2,039 AUMs to 2,950 AUMs (47 percent). This would indicate that the forage is still available for livestock, with some left over. It would be felt that outside influences were dictating local policy and programs which would be perceived as additional government intervention.	Past experience has shown that downward adjustments in grazing allocation cause ill feelings against the government among not only livestockmen, but other residents, including the youth.
Population	
If the alternative is implemented, 19 ranchers would probably sell their operations and, as many as 53 people may leave the area.	The number of jobs in the Wayne County area are very limited, and unemployment is high. There is no other existing industry which could provide employment in the Wayne County area, thus it is assumed that people who would lose jobs in agriculture would be forced to seek employment outside the area.

(3) Overall Assessment

The alternative to decrease grazing allocation by 50 percent and actual use by 22 percent. It would be resented by the livestock operators, most other residents of Wayne and the affected parts of Sevier and Piute counties as overall incrouchment on their livest.

Locally, reductions would be seen as yet another instance of decision-making by distant authorities and the feeling is now general that those authorities fail to understand the effects on local residents. Intensification of negative attitudes toward "big government," along with some efforts to gain agricultural aid to ranchers would take the form of lobbying activities through the Cattlemen's Association, or direct contact with elected representation. Litigation against the government is likely.

(4) Conclusion

The social impacts would be unquantifiable. However to some extent, the alternative would initially contribute to an already existing alienation and frustration with government. The perception of constrained local control over the community's future would persist and resentment may intensify among long-time residents.

G. SUMMARY OF MAJOR BENEFICIAL AND ADVERSE IMPACTS

The following matrix is a comparison of the major beneficial and adverse impacts for the proposal and the five alternative actions. A short summary for each resource sub-component is given if the impact is of major significance.

SUMMARY COMPARISON MATRIX
Major Beneficial and Adverse Impacts

Resource Sub-Category and Present Situation	Proposal	No Action	Maximum Constraints
Air Quality			
Present air quality is good.	Very minor and short-term adverse impact to air quality due to dust from chaining operation on 4,800 acres.	No impact.	No impact.
Sediment Yield and Erosion Condition			
Present estimated sediment yield is 247 acre-feet per year or about 0.6 acre-feet per square mile per year. Present erosion condition classes are: 34% Stable 51% Slight 12% Moderate 1% Critical 2% Unclassified	Proposal not expected to significantly impact 198,156 acres (89 percent of the planning unit) and would reduce sediment yield by 2 acre-feet per year on 21,159 acres (10 percent of the planning unit). Present soil erosion conditions on 86,269 acres (40 percent of the planning unit) would improve to 32% Stable 40% Slight 22% Moderate Less than: 2% Critical 5% Unclassified	Sediment yield would be increased on 99 percent of the planning unit. There would be an overall decline in erosion condition. The amount of change is unknown, but would not be significantly different than the present situation.	Change from the present sediment yield and soil erosion conditions are not expected to be significantly altered.
Water Quantity			
Present estimated annual water yield is 10,939 acre-feet.	No change.	No change.	No significant change.
Water Quality			
Present water quality data is lacking for individual streams. It is estimated by using data from the USGS station on Fremont River near Bicknell that all current water quality standards are being met.	Water quality would decline on 59 percent of the planning unit, improve on 15 percent, and remain constant on 25 percent.	Slight water quality degradation.	Slight water quality improvement.
VEGETATION			
Types and Subtypes (excluding Riparian Vegetation and Condition).			
Present types are: Acres / Percent Sagebrush 136,303 / 64 Grass 25,407 / 12 Pinyon-Juniper 48,087 / 23 Broad leaf trees 943 / >1 Annuals 1,450 / >1 Riparian 67 / >1 Waste 800 / >1 Riparian conditions are: Good 47 / 70 Fair 11 / 16 Poor 9 / 14	2,400 acres of vegetation type changed from pinyon-juniper to sagebrush because of chaining. The type would probably revert back to pinyon-juniper within 6 to 20 years. 2,400 acres chaining would not be expected to change vegetation type, but sagebrush composition would be reduced by about 1/2 to 30 to 40 percent of the composition. Riparian vegetation condition of poor on 9 acres would improve to fair or good within 20 years. The rest would not change.	Very little change expected. There may be a slow change to annual types on 25 allotments where authorized harvesting is greater than production. No change is expected in riparian condition.	The alternative grazing management or the proposed development would not cause change in any types. The composition of grass is expected to increase and browse decrease, but not enough to cause a type change. The 47 acres of riparian vegetation in good condition would not change. The 9 acres poor is expected to slowly improve fair and the 11 acres of fair improve slowly to good within 20 years

SUMMARY COMPARISON MATRIX
Major Beneficial and Adverse Impacts

50 Percent Reduction	No Grazing	Adjustment of Use
No impact.	No impact.	Very minor and short-term adverse impact to air quality due to dust from chaining operation on 4,800 acres.
On 43 percent of the planning unit the erosion condition would be unchanged and on 57 percent of the planning unit the erosion condition would improve to: 15% Stable 62% Slight 10% Moderate 1% Critical 12% Unclassifed	On 20 percent of the planning unit the erosion condition would be unchanged and on 80 percent of the planning unit the erosion condition would improve to: 43% Stable 46% Slight 7% Moderate 1% Critical 3% Unclassified	On 30 percent of the planning unit the erosion condition would be unchanged and on 70 percent of the planning unit the erosion condition would improve to: 57% Stable 41% Slight 2% Moderate 0% Critical 0% Unclassified
No significant change.	Increase of about 10 acre-feet per year.	No significant change.
Overall water quality would improve slightly on 57 percent of the planning unit.	Water quality would be improved.	Water quality would be improved.
Vegetation types are not expected to change with the exception of 487 acres of annual type in the Bicknell allotment which is expected to change to a grass type within 20 years. Very little change is expected in riparian condition.	Grass types increase by about 1,562 acres, annuals decrease, and all other types would remain the same. All riparian vegetation would improve to good.	2,400 acres of vegetation type changed from pinyon-juniper to sagebrush be cause of chaining. The type would probably revert back to pinyon-juniper within 6 to 20 years. 2,400 acres sagebrush chaining would not be expected to change vegetation type, but sagebrush composition would be reduced by about 1/2, to 30 to 40 percent of the composition. Riparian vegetation condition of poor on 9 acres would mprove to fair or good within 20 years. The rest would not change.

SUMMARY COMPARISON MATRIX (continued)

Resource Sub-Category and Present Situation	Proposal	No Action	Maximum Constraints
Vegetation Ground Cover			
Present average vegetation ground cover is: Acres Percent 475 21 126,314 16 21,158 28 54,294 14 10,543 13 272 9	Expected changes in vegetation ground cover: No change - 6,253 acres, stay the same or decline - 25,160 acres, would decline on 126,314 acres, increase from 28 to about 30 percent on 21,159 acres, from 14 to 16 percent ground cover on 29,134 acres, from 13 to 20 percent ground cover on 4,765 acres and from 9 to 20 percent ground cover on 272 acres.	Expected changes in vegetation ground cover: No change - 875 acres, decline - amount of decline unknown on 212,182 acres. No increases would be expected.	Expected changes in vegetation ground cover: no change--114,038 acres, amount unknown on 69,330 acres, increase from 19 to 20 percent ground cover on 29,089 acres and increase about 25 percent on 600 acres.
Key Species and Vegetation Composition			
See table 2-13 for key species and present composition.	Expected changes in key species composition: No change on 3 percent of the planning unit; remain static or decline on 13 percent; decrease on 59 percent and increase on 25 percent of the planning unit.	Expected changes in key species composition: No change on less than 1 percent of the planning unit; remain static or decline on 40 percent and decline on 59 percent of the planning unit. No increases would be expected.	Expected changes in key species composition: no change on 47 percent of the planning unit; decrease on 33 percent; and increase on 20 percent of the planning unit.
Threatened and Endangered Plants			
No officially listed plants are known to occur on the planning unit. Four plants on the proposed and candidate list are known to occur on the planning unit (see Table 2-15).	Impacts unknown.	Impacts unknown.	Impacts unknown.
Forage Production			
Present forage production is about 15,939 AUMs.	Expected changes in forage production: remain static on 25 percent, decrease slight on 59 percent, and increase on 15 percent of the planning unit. Quantifiable amount of overall increase is expected to be about 1,460 AUMs.	Expected changes in forage production: remain static on 1 percent and decrease on 99 percent of the planning unit. The amount of decrease unknown.	Expected changes in forage production: remain static on 18 percent and little or no increase (but no decreases) on 49 percent, and decrease on 33 percent of the planning unit. The amount of change is unknown.
Forage Condition			
Present forage conditions are: Acres Percent Good 112,088 53 Fair 72,128 34 Poor 28,841 13	Expected changes in forage condition: There would be no change on 38 percent deterioration on 52 percent and improve on 10 percent of the planning unit. 10,720 acres would improve to good and 1,567 acres would improve to fair.	Expected changes in forage condition: There would be no change on 1 percent and deterioration of forage condition on 99 percent of the planning unit. Number of acres that would deteriorate from good to fair or from fair to poor is unknown.	Expected changes in forage condition: There would be no change on 67 percent, and deterioration of forage condition on 33 percent of the planning unit.
Forage Condition Trend			
Present forage condition trend is down on 213,057 acres--100 percent percent of the planning unit.	Expected forage condition trend: With normal precipitation, trend would remain static on 23 percent, continue downward on 52 percent, and improve on 25 percent of the planning unit.	Expected forage condition trend: With normal precipitation, trend would improve on 1 percent and continue downward on 99 percent of the planning unit.	Expected forage condition trend: With normal precipitation, trend would improve on 67 percent of the planning unit and continue downward on 33 percent of the planning unit.

SUMMARY COMPARISON MATRIX (continued)

50 Percent Reduction	No Grazing	Adjustment of Use
Expected changes in vegetation ground cover: No change on 90,559 acres, increase from 17 to about 22 percent ground cover on 122,498 acres.	Expected changes in vegetation ground cover: No change on 42,094 acres, increase on 170,963 acres from an average 17 percent ground cover to an average ground cover of 26 percent.	Expected changes in vegetation ground cover: No change--6,253 acres, stay the same or decline--25,160 acres, increase from 16 percent to about 21 percent on 126,314 acres, increase from 28 to about 30 percent on 21,159 acres, from 14 to 16 percent ground cover on 29,134 acres, from 13 to 20 percent ground cover on 4,765 acres, and from 9 to 20 percent ground cover on 272 acres.
Expected changes in key species compositon: No change on 1 percent of the planning unit, decrease on 7 percent, remain static or increase slightly on 68 percent and increase on 24 percent of the planning unit.	Expected changes in key species composition: No change on 1 percent and increase on 99 percent of the planning unit.	Expected changes in key species composition: no change on 3 percent of the planning unit; remain static or decline on 13 percent; increase on 84 percent of the planning unit.
Impacts unknown.	Impacts unknown.	Impacts unknown.
Expected changes in forage production: Remain static on 1 percent, little or no increase (but no decrease) on 24 percent, decrease on 7 percent and forage production would increase less than ten percent on 68 percent of the planning unit. The amount of change is unknown.	Expected changes in forage production: Remain static on 1 percent and increase on 99 percent of the planning unit. Forage production is expected to double to about 30,000 AUMs in 20 years.	Expected changes in forage production: remain static on 25 percent and increase on 74 percent of the planning unit. Quantifiable amount of increase is expected to be about 3,000 AUMs.
Expected changes in forage condition: there would be no change on 93 percent and deterioration of forage condition on 7 percent of the planning unit.	Expected changes in forage conditime: there would be no change in forage condition on 1 percent of the planning unit. All poor and fair forage condition is expected to improve to good.	Expected changes in forage condition: there would be no change on 38 percent deterioration on 39 percent and improvement on 23 percent of the planning unit.
Expected forage condition trend: with normal precipitation trend would improve on 93 percent and continue downward on 7 percent of the planning unit.	Expected forage condition trend: forage condition would trend upward on 100 percent of the planning unit.	Expected forage condition trend: with normal precipitation, trend would remain static on 23 percent, and improve on 77 percent of the planning unit.

SUMMARY COMPARISON MATRIX (continued)

Resource Sub-Category and Present Situation	Proposal	No Action	Maximum Constraints
ANIMAL LIFE			
Mule Deer			
Present estimated use is 1,127 AUMs.	A total of 1,746 AUMs would be provided for 1,796 deer. Overutilization of crucial winter habitat would occur immediately on 8 percent of the planning unit and would occur on the rest of the unit within 5 years.	A total of 1,127 AUMs would be provided for 1,212 deer. Because the population is expanding and present use is higher, immediate stress would be placed on the unit's winter range with a corresponding stress incurred by the deer population. Deer could experience weight loss, high fawn mortality rate, and die-off.	A total of 3,497 AUMs would be provided for 799 deer. Overuse would occur on two allotments because existing deer numbers cannot be supported by the existing vegetation production.
Elk			
Present estimated use is 295 AUMs.	A total of 406 AUMs would be provided for 262 elk.	A total of 295 AUMs would be provided for 220 elk. Because populations are expanding, damage to range and population reductions would result.	A total of 506 AUMs would be provided for 280 elk.
Antelope			
Present estimated use by antelope is 617 AUMs.	A total of 617 AUMs would continue to be provided for 750 antelope.	A total of 617 AUMs would continue to be provided for 750 antelope, but the over-utilization of Antelope Spring and winter ranges would result in an unquantifiable, significant loss of animals.	A total of 1,255 AUMs would be provided for 1,294 antelope.
Sage Grouse			
Population located on: Awapa Plateau, Seven Mile, Fishlake, and North Fremont allotments.	Sage grouse numbers would be reduced as vegetation ground cover decreases and loss of succulent vegetation during the spring brooding period continues. The magnitude is unknown.	Sage grouse numbers would be reduced as vegetation ground cover decreases and loss of succulent vegetation during the spring brooding period continues. The magnitude is unknown.	Sage grouse numbers would be reduced as vegetation ground cover decreases and loss of succulent vegetation during the spring brooding period continues. The magnitude is unknown.
Utah Prairie Dog			
Twenty-four colonies except on the Awapa Plateau where they are unmeasurable.	Reduction in key species and succulent vegetation during the spring lactating period would cause a decrease in prairie dog population, growth rate, or both.	Reduction of key species and succulent spring vegetation could cause a reduction in prairie dog populations and/or a reduction in population growth rate. Magnitude is unknown.	Reduction of key species and succulent spring vegetation could cause a decrease in prairie dog populations and/or a reduction in population growth rate. Magnitude is unknown.
Fish			
10.175 miles of stream--6.0 miles fair condition, 3.625 miles good condition, 0.55 miles poor condition. Size and number of fish is unknown, but appear to be fewer and smaller than could be expected.	The size and number of fish in the planning unit fisheries would deteriorate on about 10 miles of stream.	The size and number of fish in the planning unit fisheries would deteriorate on about 10 miles of stream.	The size and number of fish in the planning unit fisheries would improve on 7.78 miles of stream, and 2.4 miles of stream would remain in a deteriorated condition.

SUMMARY COMPARISON MATRIX (continued)

50 Percent Reduction	No Grazing	Adjustment of Use
A total of 3,091 AUMs would be provided for 3,411 deer. Crucial deer winter range would be stressed as populations grow and populations would subject to fawn mortality, weight loss and die off, particularly during severe winters.	A total of 3,497 AUMs would be provided for 1,930 deer. Some localized over-use could occur on deer winter range.	A total of 1,937 AUMs would be provided for 1,930 deer. On 8 percent of the planning unit. there would be insufficent winter forage for deer. Within 5 years the carrying cpacity on most deer winter ranges in the planning unit would be reached resulting in an inadequate forage supply for deer.
A total of 506 AUMs would be provided for 280 elk.	A total of 506 AUMs would be provided for 280 elk.	A total of 406 AUMs would be provided for 262 elk.
A total of 617 AUMs would be provided for 750 antelope.	A total of 617 AUMs would be provided for 750 antelope. The predicted increase in key forage species would result in increased survival of an unquantified number of antelope.	A total of 617 AUMs would be provided for 750 antelope. The predicted increase in key forage species would result in improved carrying capacity and better forage for antelope.
Sage grouse numbers would be reduced as vegetetation ground cover decreases and loss of succulent vegetation during the spring brooding period continues. The magnitude is unknown.	Sage grouse numbers would increase as vegetetation ground cover improves and succulent vegetation during the spring brooding period increases. The magnitude is unknown.	Sage grouse numbers would increase as vegetetation ground cover improves and succulent vegetation during the spring brooding period increases. The magnitude is unknown.
Reduction of key species and succulent spring vegetation could cause a decrease in prairie dog populations and/or a reduction in population growth rate. Magnitude is unknown.	Increase of key species and available succulent spring vegetation would improve survival rate of prairie dog litters and cause an increase in populations and/or an assured population growth rate. Magnitude is unknown.	Increase of key species and available succulent spring vegetation would improve survival rate of prairie dog litters and cause an increase in population and/or an acceleration of popultion growth rate. Magnitude is unknown.
The size and number of fish in the planning unit fisheries would deteriorate on about 10 miles of stream.	The size and number of fish in the planning unit fisheries would improve on about 10 miles of stream.	The size and number of fish in the planning unit fisheries would deteriorate on about 10 miles of stream.

SUMMARY COMPARISON MATRIX (concluded)

Resource Sub-Category and Present Situation	Proposal	No Action	Maximum Constraints
Archaeological			
Twenty-three sites have been recorded.	Could be inadvertent damage on about 4,840 acres. Also there would be beneficial impacts as new sites are inventoried prior to development work.	No impacts.	Could be inadvertent damage on about 100 acres. Also there would be beneficial impacts as new sites are inventoried prior to development work.
Visual Resources			
Of the five possible VRM Classes, thre are found on the planning unit, II, III, and IV.	Possible impact on visual Class II if exclosure were constructed in the Class II portion of the Donkey Hill Allotment.	No impacts.	Fence construction (about 2 miles) in Hickman and River allotments may violate VRM Class II objectives.
Recreation			
Present hunter days: Deer 12,701 Antelope 117 Elk 1,119 Fisherman days 3,000	Increase in hunter days: Deer 9,016 Antelope 0 Elk 339 Sage grouse hunter days may decline. Fisherman days unchanged.	No change in big game hunting opportunities. Sage grouse decrease, fisherman days decrease.	Increase in hunter days: Deer 26,485 Antelope 121 Elk 476 Sage grouse decrease. Fisherman days increase.
Livestock Grazing			
Present livestock operators is 99.	Number of livestock operators that would be impacted are: Reduction 56 Change of season 6 Change of kind of livestock 2	No change in current allocations.	Sixty-six livestock operators would be reduced and 23 operators grazing allocations would be eliminated.
Wilderness			
Planning unit being reviewed for wilderness values.	No impact.	No impact.	No impact.
Economics			
Net ranch income: Small $4,268.00 Medium 4,554.00 Large 14,898.00	Change under "feed change" scenario: Small up $192.00 Medium up 776.00 Large up 892.00 Under "herd change" scenario: Small - no change Medium up $1,885.00 Large up 2,608.00 Total wealth increase of $65,000.00.	No change in net ranch income. Total wealth decrease of $106,020.00	Change under "feed change" scenario: Small down $ 60.00 Medium up 776.00 Under "herd change" scenario: Small down $574.00 Medium up $5,143.00 Large down 684.00 Total wealth inrease of $28,980.00
Sociology			
Strong feelings of powerlessness, dissatisfaction and insecurity exists concerning government programs.	Intensification of negative attitude toward government.	No real social impact. Livestockmen would perceive the very act of preparing the EIS as a loss of personal agency. The same feelings as described for the present situation would persist.	Alienation and frustration with government, continued resentment may intensity.

SUMMARY COMPARISON MATRIX (concluded)

50 Percent Reduction	No Grazing	Adjustment of Use
No impacts.	Any impacts on non-federal land could not be mitigated. The magnitude of this loss is unknown.	Could be inadvertent damage on about 4,840 acres. Also there would be beneficial impacts as new sites are inventoried prior to development work.
No impacts.	Fence construction (about 2 miles) in Hickman and River allotments may violate VRM Class II objectives.	Any visual modification in the Class II areas of the Donkey Hill Allotment would violate VRM Class II objectives.
Increase in hunter days: Deer 22,135 Antelope 121 Elk 652 Sage grouse decrease Fisherman days decrease	Increase in hunter days: Deer 26,709 Antelope 121 Elk 652 Sage grouse increased Fisherman days increased	Increase in hunter days: Deer 9,016 Antelope No change Elk 339 Sage grouse increase Fisherman days decrease
All 99 operators would be reduced. Average reduction would be 57 percent.	All 99 operators would be reduced 100 percent of use on public land. Some would go out of business, some get other feed sources.	69 operators would be reduced. Average reduction would be 53 percent.
No impact.	No impact.	No impact.
Change under "feed change" scenario: Small down $204.00 Medium down 132.00 Large down 520.00 Under "herd change" scenario: Small down $296.00 Medium up 486.00 Large down 1,536.00 Total wealth decrease of $60,800.00.	Change under "feed change" scenario: Small down $558.00 Medium down $1,237.00 Large down 1,811.00 Under "herd change" scenario: Small down $1,005.00 Medium down 3,519.00 Large down 7,308.00 Total wealth decrease of $186,413.00.	Change under "feed change" scenario: Small down $236.00 Medium down $153.00 Large down 603.00 Under "herd change" scenario: Small down $343.00 Medium down 563.00 Large down 1,781.00 Total wealth decrease of __________.
Alienation and frustration with government; resentment may intensify.	Alienation and frustration with government; resentment may intensify.	Alienation and frustration with government; resentment may intensify.

CHAPTER 9

CONSULTATION AND COORDINATION

CHAPTER 9
CONSULTATION AND COORDINATION

A. HISTORY OF COORDINATION EFFORTS

Management recommendations for the Parker Mountain Planning Unit in Wayne County were presented in a public meeting held in Loa, Utah on July 19, 1978. Public response to these recommendations was solicited at that time in order to make a complete assessment of each issue pertaining to actions which could affect grazing operations in the planning unit.

B. COORDINATION IN DEVELOPMENT OF THE PROPOSAL

Information compiled during the initial stages of statment preparation indicated that changes in the original planning recommendations were necessary. The new developments and changes in planning were presented to the Six County Commissioners Organization, Wayne County Commission, and the Central and Southern Utah Farm Bureau on May 16, 1979. A public meeting followed on May 24 in Loa at which all six components of the proposal as well as alternative actions were presented. This meeting was attended by approximately 40 people representing themselves individually or those organizations and agencies listed below:

Wayne County Farm Bureau
Wayne County Commission
Utah Division of State Lands
Utah Division of Wildlife Resources
Soil Conservation Service
U.S. Forest Service
Bureau of Land Management

C. CONSULTATION AND COORDINATION IN PREPARATION OF THE DRAFT ENVIRONMENTAL STATEMENT

The Parker Mountain Environmental Statement team was organized in March, 1979, at the Bureau of Land Management District Office in Richfield, Utah. The interdisciplinary team consisted of specialists in wildlife, range, water resources, recreation, botany, soils, geology, cultural resources, and socioeconomics. The following sections summarize the consultation and coordination carried out by the team specialists in the course of analyzing the proposal.

1. Federal Contacts

The following are the contacts initiated and actions completed in preparation of the draft statement. Comments received from these agencies were considered in preparation of the statement.

Agency	Nature of Contact	Response	Action Taken
U.S. Forest Service	Presented proposal.	BLM need to obtain cooperative agreement for water for the Seven-Mile Allotment. The Loa District Ranger indicated that Forest Service may cooperate in a grazing plan during development if time could be shortened.	None to date.
U.S. Fish and Wildlife Service	Informal and formal consulation initiated as required under Section 7 of the Endangered Species Act.	FWS will become involved formally because it has been determined there would be a possible impact to endangered species.	Letter received in reply to informal consultations. Reply pending formal consultation. See Letter Number 1.
Soil Conservation Service	Proposal described and data assistance requested.	Yes	Provided data assistance

2. State Contacts

Agencies of state government having jurisdictional interests or special expertise in the project, listed below, have been contacted and have supplied statement data.

Agency	Nature of Contact	Response	Action Taken
Utah Division of Wildlife Resources	Presented proposal and requested data assistance.	Yes	Provided data assistance.
Utah Bureau of Air Quality	Requested data assistance.	Yes	Provided data assistance.
Utah Bureau of Water Quality	Requested data assistance.	Yes	Provided data assistance.
Utah Division of State History	Requested data assistance.	Yes	Provided data assistance.

Agency	Nature of Contact	Response	Action Taken
Utah State Historic Preservation Officer	To comply with National Historic Preservation Act; preparation of memorandum of understanding.	Yes	A "Memorandum of Understanding" between the Bureau of Land Management and the State of Utah has been signed. See Letter Number 2.

3. Local Government

The following public officials at the local level were advised of the project. Their views and comments were considered in preparation of the statement.

Agency	Nature of Contact	Response	Action Taken
Six County Commissioners Organization	Presented proposal		None
Wayne County Commission	Presented proposal		None

D. COORDINATION IN REVIEW OF THE DES

The following list identifies those agencies, bureaus, and groups that will receive a copy of the draft environmental statement and be requested to submit written comments.

1. Federal Agencies

- Department of Agriculture
  - Agricultural Stabilization and Conservation Service
  - Forest Service
  - Soil Conservation Service
- Department of the Interior
  - Geological Survey
  - Fish and Wildlife Service
  - Bureau of Indian Affairs
  - Bureau of Mines
  - Bureau of Reclamation
  - Heritage Conservation and Recreation Service
  - National Park Service
  - Capitol Reef National Park
  - Office of the Solicitor

Department of Commerce
Advisory Council on Historic Preservation
Environmental Protection Agency

2. State Agencies and Organizations

State of Utah
    Clearing House (A-95)
    Department of Agriculture
    Department of Natural Resources
    Division of Wildlife Resources
    Division of Lands
University of Utah
Utah State University

3. Local Agencies

Six County Commissioners Organization
Wayne County Commission

4. Nongovernment Organizations

Ada County Fish and Game League
Audubon Society
Brigham Young University
Common Cause
Council on Utah Resources
Defenders of the Outdoor Heritage
Defenders of Wildlife
Enchanted Wilderness Association
Environmental Action
Environmental Awareness
Environmental Defense Fund
Friends of the Earth
Good Earth
Institute of Ecology
Izaak Walton League
League of Women Voters
National Council of Public Land Users
National Parks and Recreation Association
National Stock Grower's Association
National Wildlife Federation
Natural Resources Defense Council
Nature Conservancy
Nevada Outdoor Recreation Association
Oregon Environmental Council
Pacific Legal Foundation
Pro-Utah, Inc.
Public Lands Council
Rocky Mountain Center on Environment
Rocky Mountain Sportsmen Association
Save Our Canyons Committee
Sierra Club
Society for Range Management

The Wilderness Society
The Wildlife Society
Utah Cattlemen's Association
Utah Council, Trout Unlimited
Utah Environment Center
Utah Farm Bureau
Utah Nature Study Society
Utah Sportsmen Association
Utah Archaeological Society
Utah Wildlife and Outdoor Recreation Federation
Utah Wool Grower's Association
Women's Conservation Council of Utah

5. Congressional

Utah Delegation

6. Interested Individuals

Copies of this draft environmental statement will be available for public inspection at the Bureau of Land Management Offices listed below:

Washington Office of Public Affairs
18th and C Street, N.W.
Washington, D.C. 20240
Phone (202) 343-4151

Utah State Office
University Club Building
136 East South Temple
Salt Lake City, Utah 84111
Phone (801) 524-4257

Richfield District Office
150 East 900 North
Richfield, Utah 84701
Phone (801) 896-8221

LETTER NUMBER 1

STATES GOVERNMENT

memorandum

B L M - RICHFIELD	Indiv	Act	Info
DM			✓
Asst DM			
Resources			✓
Operations			
Plan & Envir			

FEB 15 1979

Project Staff		✓	
Admin			
Sevier R RA			
Hen Mtn RA			
House RA			
[illegible]			

Done
copy

DATE: February 7, 1979

REPLY TO ATTN OF: Area Manager, FWS
Salt Lake City, Utah

SUBJECT: Informal Consultation, Effects of Spring Grazing
on Endangered Species

TO: Donald L. Pendleton
District Manager, BLM
Richfield, Utah

We are in receipt of your January 8, 1979 memorandum request [illegible]rma consultation on the effects of spring grazing on the Utah prairie dog and the bald eagle.

Many of the following comments concerning the prairie dog came from Mr. Coleman Crocker-Bedford's Master of Science thesis, Range Interactions of Utah Prairie Dogs and Cattle. Mr. Crocker-Bedford is now a biologist for the U. S. Forest Service in Richfield, Utah.

According to Mr. Crocker-Bedford, past livestock grazing may be responsible for much of the present scarcity of early spring forage on high plateau rangelands. Livestock grazing can greatly affect the distribution and density of spring forage for Utah prairie dogs. Prairie dogs occurring at high elevations depend upon early spring forage for survival as well as normal reproduction. Breeding occurs in early March and lactation continues into June. Adult female prairie dogs require twice as much energy during the reproductive season as at other times of the year. Consequently, any spring livestock grazing that reduces the vigor of "cool season grasses" may seriously threaten~~ed~~ normal reproduction. If range conditions become suboptimal for prairie dogs then reproductive rates needed to sustain a stable population may drop below critical levels.

Heavy grazing by livestock in the past has reduced suitable prairie dog habitat. In fact, overgrazing on prairie dog range is one of the main factors that contributed to the endangered status of the Utah prairie dog. The current standards for spring grazing on Awapa will not further reduce the food supply of the Utah prairie dog if regulated; however, prairie dog expansion seems unlikely due to the present permit restrictions. We urge you to continue close supervision of all grazing practices to insure that replacement of vital grasses by shrubs is minimal. We suggest that livestock grazing be gradually shifted from spring to late spring, early summer. This will encourage the growth of cool season forage which will enhance habitat features for the Utah prairie dog.

The effects of spring grazing on bald eagles are of no serious concern at this time. Bald eagles usually arrive in Utah in mid-November and depart in early March. If range conditions were severely overgrazed, the eagle-lagomorph food chain might possibly be in jeopardy. Eagle predation on livestock occurs most commonly on overgrazed land due to an increase in food stress from reduction in natural prey populations. Golden eagles, rather than bald eagles, are more frequently associated with this type of conflict.

Incidentally, verbal requests for informal consultation may be made directly to our Endangered Species Team; however, correspondence concerning informal consultations should be addressed to the Area Manager.

Thank you for your interest in conserving endangered species.

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

OPTIONAL FORM NO. 10
(REV. 7-76)
GSA FPMR (41 CFR) 101-11.6
5010-112

LETTER NUMBER 2

1896

STATE OF UTAH
Scott M. Matheson, Governor
DEPARTMENT OF
DEVELOPMENT SERVICES
Division of State History

Melvin T. Smith, Director
Crane Building, Suite 1000
307 West 2nd South
Salt Lake City, Utah 84101
Telephone (801) 533-5755

April 4, 1979

Craig Harmon
EPS Archeologist
Bureau of Land Management
Richfield District Office
150 East 900 South
Richfield, Utah 84701

RE: Memorandum of Understanding for Parker Mountain Range Management Environmental Statement

Dear Mr. Harmon:

The staff has reviewed the enclosed memorandum of understanding and concur with its intentions. If properly implemented, it will adequately protect cultural resources, although we will reserve the right to comment on the technical aspects of surveys and research. This letter is not to be used as clearance for the E.I.S. We will comment when the draft E.I.S. is prepared.

If you have any questions or concerns, please call or write Wilson G. Martin, Preservation Development Coordinator, Utah State Historical Society, 307 West 200 South, Salt Lake City, Utah 84101, 533-6017.

Sincerely,

J. Phillip Keene

J. Phillip Keene III
Executive Director
and
State Historic Preservation Officer

WGM:br:C267:Multi

Enclosure

STATE HISTORY BOARD: Dr. Milton C. Abrams, Chairman • Theron H. Luke • Dr. Ted J. Warner • Elizabeth Montague • Howard C. Price, Jr.
Dr. Dello G. Dayton • Dr. Wayne K. Hinton • Helen Z. Papanikolas • David S. Monson • Elizabeth Griffith • Mabel J. Oliver

CULTURAL RESOURCES
MEMORANDUM OF UNDERSTANDING
PARKER MOUNTAIN RANGE MANAGEMENT ENVIRONMENTAL STATEMENT
BETWEEN
THE BUREAU OF LAND MANAGEMENT
AND
THE STATE OF UTAH

I. PURPOSE

The Bureau of Land Management, hereinafter referred to as the Bureau, is preparing the Parker Mountain Range Management Environmental Statement (Parker Mountain ES) under the provisions of the National Environmental Policy Act of 1969. The Bureau has determined that cultural values could be damaged or lost as a result of actions proposed in the Parker Mountain ES. The following kinds of actions are proposed on public lands administered by the Bureau:

a. Pipeline construction
b. Reservoir construction
c. Fenceline construction

The Utah State Historic Preservation Office, hereinafter referred to as the State, is interested in assuring that cultural values in Utah be protected. The Bureau and the State have consulted and agree as to the measures, outlined in this agreement, which should be undertaken to protect these values should authorization be granted to use public lands in Utah administered by the Bureau for the purpose of any of the above mentioned proposed actions. In this agreement, "cultural resources" means data and sites which have archaeological, historical, architectural, or cultural importance and interest. Investigators will be qualified to evaluate these "cultural resources." Qualifications of investigators will be submitted to the State Historic Preservation Officer.

II. AUTHORITY

This agreement is authorized under the Federal Land Policy and Management Act of 1976 and the National Historic Preservation Act of 1966. It is in accord with Bureau policies and programs. It does not abrogate nor amend any other agreement between the Bureau and the State.

III. RESPONSIBILITIES AND PROCEDURES

The Bureau will comply with 36 CFR 800 in identifying sites which are listed in or eligible for inclusion in the National Register of Historic Places.

A. As part of the planning and environmental analysis required prior to major grazing management decisions, the Bureau will search for archaeological and historical literature concerning the Parker Mountain area. Literature and records searches have been conducted for all public lands that would be affected by the Parker Mountain proposal.

B. After completing the planning and environmental analysis process, should the proposed management be implemented, the Bureau will enforce the following stipulations:

1. Prior to initiation of ground-disturbing activities, literature searches and intensive surveys will be undertaken on all areas which would be disturbed.

2. Wherever possible and feasible, cultural resources will be avoided by construction and related activities. This will be accomplished mainly by regulating vegetative manipulation activities and adjusting the location of other facilities such as pipelines and fences. Significant cultural resources facing inundation due to proposed reservoir construction will be salvaged to recover data that would otherwise be lost.

3. A professional archaeologist may be required to be present when ground-disturbing operations are underway.

4. Subsurface cultural resources that are encountered during any construction will be salvaged if there is no other recourse in such a situation.

C. Wherever it is not possible and feasible to avoid sites that contain cultural values, the Bureau will consult with the State to determine the most satisfactory means of mitigating damage, as required by 36 CFR 800.

D. The Bureau will provide cultural resource reports, technical reports, and other pertinent material to the State.

E. The State will provide the Bureau with a letter for use as an exhibit in the Parker Mountain ES, to the effect that the procedures herein proposed by the Bureau, if correctly implemented, will satisfy the State's interest.

F. The attached list identifies the specific actions that the Bureau anticipates will be included in the Parker Mountain ES. The list may be brought up to date, as necessary, without amending this agreement in any way.

IV. IMPLEMENTATION

A. This agreement will become effective on the date of the last signature on this agreement.

B. Either party may request revision or cancellation of this agreement by written notice, not less than 30 days prior to the time when such action is proposed.

C. Any problems resulting from this agreement which cannot be resolved by the Bureau and the State will be referred to the Secretary of the Interior and the Governor of Utah for resolution.

8/17/78
Date

Paul L Howard
Utah State Director
Bureau of Land Management
Department of the Interior

July 31, 1978
Date

Utah State Historic Preservation Officer

APPENDIXES, GLOSSARY,
AND REFERENCES

APPENDIX I-1

Existing and Proposed Grazing Statistics

Basic Information					Existing Forage Use and Allocation													Proposed Forage Use and Allocation														
													Current Use						Estimated Initial Grazing						Long-Term Allocation 11-20 Years After Implementation							
	Land Status					Current Allocation (AUMs)		Number and Kind of Animal					Livestock[b]		Estimated Wildlife Use (AUMs)[c]				Livestock		Wildlife Use				Livestock			Wildlife				
								Livestock[a]		Wildlife											AUMs					Percent of Current		AUMs			Percent of Current	
Proposed Action Components and Allotments	Public	State	Private	Season of Use	Forage Production (AUMs)	Livestock	Wildlife	Cattle	Sheep	Antelope	Deer	Elk	AUMs	% of Allocation	Antelope	Deer	Elk	Season	AUMs	% of Current Allocation	Antelope	Deer	Elk	Percent of Current Use	AUMs	Allocation	Use	Antelope	Deer	Elk	Allocation	Use
NO LIVESTOCK GRAZING																																
Dez Hickman	155	0	0	--	6	0	0[d]	0	0	0	6	0	0	--	0	5	0	--	0	--	0	6	0	120	0	--	--	0	6	0	--	120
Wildlife	320	0	0	--	4	0	0[d]	0	0	0	3	0	0	--	0	4	0	--	0	--	0	4	0	100	0	--	--	0	4	0	--	100
Subtotal	475	0	0	--	10	0	0	0	0	0	9	0	0	--	0	9	0	--	0	--	0	10	0	111	0	--	--	0	10	0	--	111
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)																																
Bicknell Spring[e]	n/a[f]	n/a	n/a	5/16-6/30	1,029	1,029	n/a	1,019	0	n/a	n/a	n/a	878	85	n/a	n/a	n/a	5/16-6/30	1,029	100	n/a	n/a	n/a	n/a	1,029	100	117	n/a	n/a	n/a	n/a	n/a
Cedar Peak[e]	12,351	589	0	5/16-6/30 9/11-10/25	1,046	655	391	0	1,289	27	27	7	506	77	20	39	11	5/16-6/30 9/11-10/25	655	100	20	121	64	217	655	100	129	20	121	64	52[g]	293
Hare Lake[e]	11,453	1,229	639	5/16-6/30 9/16-10/25	870	545	325	0	1,908	37	14	0	481	88	20	39	0	5/16-6/30 9/16-10/25	545	100	20	61	53	137	545	100	113	20	61	53	41[g]	227
Smooth Knoll[e]	18,761	920	0	5/16-6/30 9/16-10/31	1,682	1,053	629	0	1,510	150	14	0	590	56	67	32	0	5/16-6/30 9/16-10/31	1,053	100	67	61	5	129	1,053	100	178	67	61	5	21[g]	134
Bicknell Winter[e]	n/a	n/a	n/a	4/16-5/15 9/1-3/31	1,306	1,306	n/a	843	0	n/a	n/a	n/a	776	59	n/a	n/a	n/a	4/16-5/15 9/1-3/31	1,306	100	n/a	n/a	n/a	n/a	1,306	100	168	n/a	n/a	n/a	n/a	n/a
Flat Top[e]	19,256	2,790	0	5/16-6/30 11/1-1/31	1,265	739	526	0	1,150	124	61	0	418	57	53	79	0	5/16-6/30 11/1-1/31	739	100	53	202	0	134	739	100	177	53	202	0	48[g]	193
King Sheep[e]	9,341	0	0	11/1-2/28	275	161	114	0	145	49	82	0	53	33	20	74	0	11/1-2/28	161	100	20	94	0	121	161	100	304	20	94	0	100	121
Cedar Grove	11,755	1,280	0	5/11-6/30 10/1-1/15	1,320	1,134	0[d]	308	1,980	27	8	120	418	37	18	10	158	5/11-6/30 10/1-1/15	1,134	100	18	10	158	100	1,134	100	271	18	10	158	--	100
Cyclone Co-op[e]	n/a	n/a	n/a	5/1-5/31	622	622	n/a	618	0	n/a	n/a	n/a	524	84	n/a	n/a	n/a	5/1-5/31	622	100	n/a	n/a	n/a	n/a	622	100	119	n/a	n/a	n/a	n/a	n/a
Co-op[e]	7,160	120	0	5/16-6/30	508	229	279	0	929	80	14	6	182	79	65	24	9	5/16-6/30	229	100	65	51	9	128	229	100	126	65	51	9	45[g]	128
Cyclone[e]	17,603	1,957	0	5/16-6/30 10/1-11/15	1,203	542	661	0	895	165	27	7	527	97	100	32	11	5/16-6/30 10/1-11/15	542	100	100	104	11	150	542	100	103	100	104	11	33[g]	150
Fishlake	2,880	1,200	0	6/1-6/25 10/21-11/10	236	162	0[d]	0	1,800	8	15	40	162	100	7	14	53	6/1-6/25 10/21-11/10	162	100	7	14	53	100	162	100	100	7	14	53	--	100
Hector Hollow	2,002	0	0	3/11-4/30 5/11-6/10 12/1-1/31	199	138	0	109	100	0	20	0	56	41	0	14	0	3/11-6/10 12/1-1/31	138	100	0	61	0	436	138	100	246	0	61	0	--	436
Lyman	2,037	0	0	12/1-3/15	157	125	0	37	0	0	20	0	89	71	0	14	0	12/1-3/15	125	100	0	32	0	229	125	100	140	0	32	0	--	229
Post Hollow	11,715	1,911	0	10/15-3/31	631	499	132	20	1,345	140	48	0	293	59	90	42	0	10/15-3/31	499	100	90	42	0	100	499	100	170	90	42	0	100	100
Subtotal	126,314	11,996	639	--	12,349	8,939	3,057	2,954	13,051	807	350	180	5,953	67	460	413	242	--	8,939	100	460	853	353	139	8,939	100	150	460	853	353	54	149
IMPLEMENT TWO PASTURE REST-SEASONAL ROTATION GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring)																																
Seven Mile[e,h]	21,159	1,274	0	5/1-6/30	660	816	0	766	150	44	164	40	456	56	8	104	53	5/16-6/15	430[i]	53	8	104	53	100	816	100	179	8	489	53	--[g]	333
Subtotal	21,159	1,274	0	--	660	816	0	766	150	44	164	40	456	56	8	104	53	--	430[i]	53	8	104	53	100	816	100	179	8	489	53	--	333
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter)																																

Bicknell	1,819	0	0	11/1-3/31	149	150	0	19	0	0	13	0	75	50	0	11	0	11/1-3/31	120	80	0	29	0	264	120	80	160	0	29	0	--	264
Lime Kiln	2,960	0	320	11/1-2/28	332	354	0	7	484	0	20	0	229	65	0	14	0	11/1-2/28	274	77	0	58	0	414	274	77	120	0	58	0	--	414
Loa Winter	n/a	n/a	n/a	10/16-3/31	142	254	172	96	0	n/a	n/a	0	133	52	n/a	n/a	n/a	10/16-3/31	142	56	n/a	n/a	n/a	n/a	142	56	107	n/a	n/a	n/a	262	n/a
Deleeuw	3,238	625	0	5/21-5/31 7/1-1/30	181	168	n/a	0	350	48	82	0	118	70	25	56	0	10/16-3/31	90	54	25	66	0	112	90	54	76	25	66	0	n/a	112
Long Hollow	8,064	640	0	1/16-3/20	393	332	n/a	0	1,200	77	68	0	245	74	40	65	0	1/16-3/20	195	59	40	158	0	189	195	59	80	40	158	0	n/a	189
Terza Flat	7,278	1,312	0	2/1-3/15	334	321	n/a	0	1,150	124	20	0	234	73	65	41	0	2/1-3/15	172	54	65	97	0	153	172	54	74	65	97	0	n/a	153
Miner's Mountain[j]	15,683	2,000	0	10/16-5/31	320	211	0	160	0	0	137	0	144	68	0	118	0	11/1-11/30 5/1-5/31	161	76	0	159	0	135	161	76	92	0	159	0	--	135
Neff Ranch	1,646	0	1,174	1/6-2/25	180	105	0	0	300	0	20	0	105	100	0	14	0	1/6-2/25	89	85	0	91	0	650	89	85	85	0	91	0	--	650
North Fremont	3,351	642	0	11/1-4/30	235	323	0	0	450	44	54	0	216	67	19	47	0	11/1-4/30	134	41	19	82	0	153	134	41	62	19	82	0	--	153
Sand Wash	778	0	0	2/1-2/25	40	54	0	0	350	0	13	0	0	0	0	9	0	2/1-2/25	22	41	0	18	0	200	22	41	--	0	18	0	--	200
Torrey Town[i]	9,477	66	160	10/16-5/31	37	500	0	112	0	0	54	0	59	12	0	47	0	10/16-5/31	27	5	0	10	0	21	27	5	46	0	10	0	--	21
Subtotal	54,294	5,285	1,654	--	2,343	2,772	172	394	4,284	293	481	0	1,558	56	149	422	0	--	1,426	51	149	768	0	161	1,426	51	92	149	768	0	533	161
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Winter)																																
Busenbark	356	0	0	12/1-12/31	30	30	0	0	150	0	7	0	20	67	0	6	0	12/1-12/31	25	83	0	5	0	71	25	83	125	0	5	0	--	71
Donkey Hill	1,367	0	0	10/16-3/15	25	25	0	10	0	0	20	0	25	100	0	17	0	10/16-3/15	15	60	0	10	0	59	15	60	60	0	10	0	--	59
Government Creek	1,842	0	0	12/1-2/28	91	91	0	0	147	0	54	0	87	96	0	47	0	12/1-2/28	60	66	0	31	0	66	60	66	69	0	31	0	--	66
Grover	1,582	0	0	11/1-5/31	178	120	58	17	0	0	28	0	17	14	0	24	0	11/1-5/31	120	100	0	58	0	242	120	100	706	0	58	0	100	242
Horse Pasture	640	0	0	8/16-4/15	14	14	0	2	0	0	20	0	8	57	0	17	0	8/16-4/15	6	45	0	8	0	100	6	45	75	0	8	0	--	100
River	2,029	0	160	10/16-4/15	75	75	0	13	0	0	28	0	60	80	0	24	0	10/16-4/15	57	76	0	18	0	75	57	76	95	0	18	0	--	75
Spring Branch	492	80	0	11/1-4/15	52	11	41	2	0	0	9	0	6	55	0	8	0	11/1-4/15	17[k]	156	0	35	0	389	17[k]	155	283	0	35	0	85	438
Teasdale Bench	1,200	0	0	1/1-1/31	20	20	0	0	100	0	20	0	20	100	0	17	0	1/1-1/31	11	55	0	9	0	53	11	55	55	0	9	0	--	53
Teasdale Ranch	1,035	0	0	10/16-4/15	80	80	0	20	0	0	13	0	71	89	0	11	0	10/16-4/15	70	88	0	10	0	91	70	88	97	0	10	0	--	91
Subtotal	10,543	80	160	--	565	466	99	64	397	0	199	0	314	67	0	171	0	--	381	82	0	184	0	109	381	82	121	0	184	0	186	109
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter)																																
Hickman	272	0	0	6/1-7/31	12	4	0[d]	2	0	0	9	0	4	100	0	8	0	11/1-3/31	4	100	0	8	0	100	4	100	100	0	8	0	--	100
Subtotal	272	0	0	--	12	4	0[d]	2	0	0	9	0	4	100	0	8	0	--	4	100	0	8	0	100	4	100	100	0	8	0	--	100
GRAND TOTAL	213,057	18,635	2,453	--	15,939	12,997	3,328	4,180	17,882	1,144[l]	1,212[l]	220[l]	8,285	64	617	1,127	295		11,180	86	617	1,927	406	139	11,566	89	140	617	2,312	406	100[g]	164

Source: BLM Parker Mountain Planning Couments, 1978.

Notes:

[a] Number may vary from year to year. Livestock grazing allocation (AUMs) remains constant.

[b] Based on the average authorized active (licensed) use for the 3 years 1975-77.

[c] Use converted from Utah Division of Wildlife Resources information. Due to lack of other information, these are considered competitive AUMs.

[d] Though no reservations were made, it is assumed, based on current forage condition and trend, that forage is available for the AUMs of wildlife use listed in estimated initial wildlife use column.

[e] Allotments currently being managed under allotment management plans (AMP).

[f] n/a = not applicable, as information for these allotments is included in the sub-allotments listed there under, or allotment listed above.

[g] There are 1,809 AUMs that would be allocated to watershed, aesthetics, threatened or endangered species (see Appendix I-6).

[h] The Brian, Rees, Tanner, and Taylor Farm allotments would be combined with the Seven Mile Allotment and Livestock grazing currently allowed in these allotments would be licensed in the Seven Mile Allotment.

[i] Use would be reduced to 215 AUMs the first year of implementation (See Table 1-5 for details).

[j] Use extends well into the spring period.

[k] Adjusted to allow at least 1/3 of all forage for livestock.

[l] Includes both summer and winter animals--antelope 394 summer, 750 winter; deer 109 summer, 1,103 winter; elk 20 summer, 200 winter.

APPENDIX I-2

The Ocular Reconnaissance Forage Survey (Discussion on Methodology)

Forage Production for the Parker Mountain Planning Unit was estimated by the Ocular Reconnaissance Forage Survey method (BLM Manual 4412.11A).

During 1956-57 and 1975-76, BLM employees or contractors, completed forage inventories in the Parker Mountain Planning Unit.

The inventory consisted of two phases: data collection and compilation of data. In order to complete the data collection phase, the surveyed area was first divided into vegetation subtypes (a relatively homogenous group of plants). Photo interpretation was used to outline the more obvious vegetation subtypes on aerial photographs. These delineations were verified and refined during the data gathering process. A write-up area was delineated for each vegetation subtype by allotment. The attached Example 1 is in the big sagebrush subtype.

The next phase was data collection within the various write-up areas. The Ocular Reconnaisance Forage Survey required measurement or estimation of vegetation density (amount of cover) and composition of the various species within each write-up area. To get a reasonably accurate sample, the data collection team first established the location of one or more sites within the write-up area which reasonably represented the vegetation characteristics of the write-up area.

A 300-point transect was then run. At each point on the transect, the observer determined if a "hit" was made on a plant. If so, the species was recorded and a determination was made whether the plant was available to grazing animals. The number of hits on vegetation was then translated into average density, (percent vegetation cover).

In the attached Example 1, 75 hits were made on vegetation in the 300 pace transect which equals 25 percent density (75 ÷ 300) and was recorded on Form 4412-1. The percentage of hits on any particular species was divided by the total hits which became the percentage composition for that species recorded on Form 4412-1. In Example 1, of the 75 hits on vegetation, 23 were on Bogr (blue grama) which equals 31 percent composition (23 ÷ 75). Orhy (Indian ricegrass) received four hits which equals 5 percent. Thus the percentage composition is determined for each vegetation species hit in the transect. Ocular estimates were made on the percent composition of individual plant species instead of using 300 hits. This process was repeated for each of the write-up areas in the Parker Mountain Planning Unit.

A number of other observations were also made in each write-up area such as livestock forage condition rating, erosion conditions, range useability, percent slope, elevation, and exposure.

The second phase of determining grazing capacity involved compilation. The following is a description of the actions taken to arrive at a grazing capacity. The first step was to multiply the composition of each species by the Proper Use Factor (PUF). A PUF represents the percent of a plant's current year's growth that can be consumed by grazing animals without causing damage to the plant or a decline in range condition. Proper Use Factors varied depending on the physiology of the plant, type of grazing animal, and the season when grazing occured. In the example, the PUF for blue grama is 40.

Form 4412–1
(November 1970)

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Writeup No. EM-103

Date 77/23/76

Aerial Photo No. 7-14-G12

136 acres

FORAGE SURVEY TYPE WRITEUP
(OCULAR RECONNAISSANCE METHOD)

Cyclone Allotment

Examiner Martinsen	KIND OF GRAZING ANIMAL *	SEASON OF USE	SECTIONS	TWP.	RGE.	MER.
Type 4-Artr-Arno-Bogr	Sheep Cattle	Sp & F Sp	24	285	1E	SLM
Ac/AUM 7	Deer Antelope	W Sp & W	19	295	2E	SLM

	SPECIES	TOTAL ALLOWABLE PUF	% COMPOSITION	CATTLE PUF Sp	COMP. X C PUF	SHEEP PUF	COMP. X S PUF	DEER PUF	COMP. X D PUF	Sheep PUF	COMP. X S/F PUF
GRASSES	Bogr	.40 .124	.31	.40	.124	.40	.124	.05	.0155	.40	.124
	Orhy	.50 .025	.05	.50	.025	.40	.02	.05	.0025	.20	.01
	Pose	.50 .005	.01	.40	.004	.50	.005	.15	.0015	.10	.001
	Sihy	.50 .005	.01	.50	.005	.30	.003	.05	.0005	.10	.001
	SUBTOTAL										
FORBS											
	SUBTOTAL										
SHRUBS	Arno	.30 .084	.28	0	0	.20	.056	.30	.084	.30	.084
	Artr	.35 .1085	.31	.05	.0155	.10	.031	.35	.1085	.15	.0465
	Chvi	.15 .0015	.01	.10	.001	.15	.0015	.30	.003	.15	.0015
	Gusa	0	.01	0	0	0	0	0	0	0	0
	JUNI	.15 .0015	.01	0	0	0	0	.15	.0015	0	0
		.3545									
	SUBTOTAL		.62								
	TOTALS		100		.1745		.2405		.717		.268

Av C PUF 1745 × Av Den .25 = FAF .0436 × 100 % Util = Net FAF .0436 ; FAR .64 ÷ Net FAF 0436 = 14.6 Ac/AUM

Av S PUF .2405 × Av Den .25 = FAF .0601 × 100 % Util = Net FAF .0601 ; FAR .64 ÷ Net FAF .0601 = 10.6 Ac/AUM

Av D PUF .217 × Av Den .25 = FAF .0542 × 100 % Util = Net FAF .0542 ; FAR .64 ÷ Net FAF .0542 = 11.7 Ac/AUM

Av S PUF .268 × Av Den .25 = FAF .067 × 100 % Util = Net FAF .0670 ; FAR .64 ÷ Net FAF 0670 = 9.5 Ac/AUM

Total Net FAF .0886 ; FAR .64 ÷ Net FAF 0886 = 7 Ac/AUM

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* Livestock and major game species. *(Other game species making inappreciable use are:*

The products of multiplying each species' composition by the appropriate PUF were then added. This sum was multiplied by the average vegetative density (percent vegetative cover) to determine the forage acre factor (FAF). The forage acre factor represented the percent of the total area that was covered with usable forage in the write-up area. In the example, the FAF of 0.0436 means that 4.36 percent of the write-up area was covered with available forage.

The next step involved multiplying the FAF by a utilization factor. The utilization factor is the percent of the total acreage usable by a particular kind of livestock within the write-up area. In the example, the percent utilization factor was 100 percent, since unuseable acres were not included within the write-up areas. They were delineated prior to determination of write-up areas. Some write-up areas included AUMs for big game only because the entire area was unuseable for livestock grazing. The product of this multiplication (FAF x Utilization Factor = Net FAF) is the Net Forage Acre Factor or 0.0436 for the example.

Following this process, the Net Forage Acre Factor was divided by the Forage Acre Requirement (FAR). The FAR is that portion of an acre covered with sufficient forage to sustain one cow and calf or their equivalent for 1 month which was 0.64 for the example.

The result of this division process is the grazing capacity of the write-up area expressed in acres per AUM, i.e., the number of acres required to produce one AUM which was 14.6 acres per AUM for cattle in the example. By dividing this figure into the number of acres in the vegetation subtype, the number of AUMs available was obtained for each kind of animal. For the 136 acre example, the grazing capacity for cattle is 9.3 AUMs (136 acres ÷ 14.6 acres per AUM). This process was repeated for each of the write-up areas. The result was the total number of AUMs available for grazing in each allotment and subsequently for the planning unit.

APPENDIX I-3

Calculations of Interim Grazing Allocations for the Seven Mile Allotment

Livestock:

Year 1

733[a] AUMs preference (as per 1956-57 Range Survey) Seven Mile Allotment.

(-)213 AUMs blue grama (29 percent) unuseable by livestock during May 16-June 15.

(-)165 AUMs competition with wildlife (as requested by UDWR).

+37 AUMs of blue grama that would be useable by wildlife (29 percent of the 127 AUMs (wildlife AUMS that UDWR requested in Seven Mile).

+103 AUMs in Brian, Rees, Tanner, and Taylor Farm allotments
-65 AUMs unuseable by livestock (38 AUMs are useable by wildlife).

430 AUMs Total
215 AUMs on a pasture basis (two pastures).

Year 2

215 AUMs from unseeded pasture (seeded pasture is fenced and rested).

Year 3

0 AUMS--initial rest for the pasture seeded second and second years rest for the pasture seeded first.

Year 4

290 AUMs on first seeded pasture which is now being grazed. Capacity is based on the following calculation.

$$\frac{(816-215)}{8} + 215 = 215 + 75 = 290$$

Year 5

$$\frac{816-215}{8} + 290 = 365$$

[a] Does not include allocation from the Brian, Rees, Tanner, and Taylor Farm Allotments since they are unsuitable for cattle grazing use due to roughness of terrain and distance from water.

Year 6

$$\frac{816-215}{8} + 365 = 440$$

Year 7

$$\frac{816-215}{8} + 440 = 515$$

Year 8

$$\frac{816-215}{8} + 515 = 590$$

Year 9

$$\frac{816-215}{8} + 590 = 665$$

Year 10

$$\frac{816-215}{8} + 665 = 740$$

Year 11

$$\frac{816-215}{8} + 740 = 816$$

Wildlife:

Year 1

165 AUMS--based on existing big game numbers as follows:

Antelope	8 AUMs
Deer	104 AUMs
Elk	53 AUMs

Year 2

Same as year.

Year 3

$$\frac{550-165}{9} + 165 = 208 \text{ AUMs}$$

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Year 4

$$\frac{550-165}{9} + 208 = 251 \text{ AUMs}$$

Year 5

$$\frac{550-165}{9} + 251 = 293 \text{ AUMs}$$

Year 6

$$\frac{550-165}{9} + 293 = 336 \text{ AUMs}$$

Year 7

$$\frac{550-165}{9} + 336 = 379 \text{ AUMs}$$

Year 8

$$\frac{550-165}{9} + 379 = 422 \text{ AUMs}$$

Year 9

$$\frac{550-165}{9} + 422 = 464 \text{ AUMs}$$

Year 10

$$\frac{550-165}{9} + 464 = 507 \text{ AUMS}$$

Year 11

$$\frac{550-165}{9} + 507 = 550 \text{ AUMs}$$

APPENDIX I-4

The Brian, Rees, Tanner, and Taylor Farm allotments would be combined with the Seven Mile Allotment for the proposal. The following Table shows the pertinent data for these five allotments.

TABLE I-4-1

												Current Use				
	Land Status (Acres)				Current Allocation		Number and Kind of Animal					Livestock		Estimated Wildlife Use (AUMs)		
							Livestock		Wildlife							
Allotments	Public	State	Private	Season of Use	Livestock	Wildlife	Cattle	Sheep	Antelope	Deer	Elk	AUMs	% of Allocation	Antelope	Deer	Elk
Seven Mile	18,639	1,274	0	5/6-6/15	733	0	723	0	44	109	40	436	59	8	66	53
Brian	640	0	0	12/1-3/31	33	0	27	50	0	13	0	13	39	0	9	0
Rees	1,080	0	0	3/1-4/30	32	0	16	0	0	20	0	0	0	0	14	0
Tanner	400	0	0	--	0	0	0	0	0	13	0	0	0	0	9	0
Taylor Farm	400	0	0	12/1-1/31	18	0	0	100	0	9	0	7	39	0	6	0
Total	21,159	1,274	0	--	816	0	766	150	44	164	40	456	56	8	104	53

APPENDIX I-5

Determination of Initial Stocking Rates for Loa Winter, Deleeuw, Long Hollow, Terza Flat, Bicknell, and North Fremont Allotments

While forming the proposal for the Parker Mountain EIS, it became apparent that an adjustment in stocking rate was needed for the subject allotments since they had in them considerable acreages in poor livestock forage condition. Table A shows the present grazing situation of the six allotments. Subsequently, the Lime Kiln, Lyman, Hector Hollow and Sand Wash Allotments, which were range surveyed in 1975-76 were selected for a comparative analysis for the purpose of determining probable initial stocking rates on the subject allotments. The Lime Kiln, Lyman, Hector Hollow and Sand Wash Allotments were selected for the comparative analysis because of their similarities in vegetation, soils, elevation, climate, and topography to the subject allotments.

The Lyman Allotment was selected for the comparative analysis with the Bicknell Allotment and the Hector Hollow Allotment was compared to the North Fremont. Table I-5-1 shows the comparisons between the vegetation subtypes. The 1956-57 range survey shows 27 percent of the Bicknell Allotment in poor livestock forage condition and a grazing capacity of 12.1 acres per AUM for cattle. The 1975 survey showed Lyman Allotment had a grazing capacity of 15.1 acres per AUM for cattle and 63.2 acres per AUM for deer. Due to similarities between the two allotments, the initial stocking rate of the Bicknell Allotment could be established on the basis of the recent Lyman range survey of 15.1 acres per AUM for cattle and 63.2 acres per AUM for deer. This would give Bicknell Allotment an initial stocking rate of 120 AUMs for cattle and 29 AUMs for deer.

The North Fremont vegetation subtypes compare somewhat to the Hector Hollow vegetation when it is realized that the difference between the pinyon juniper subtype and the shortgrass subtype is mainly a matter of density of the pinyon juniper in that particular area. The Hector Hollow and North Fremont Allotments are adjacent to one another. The 1956-57 range survey showed a grazing capacity of 10.4 acres per AUM for sheep and livestock forage condition was 79 percent poor in the North Fremont. The 1975 survey of the Hector Hollow Allotment showed the condition was fair to good and had a grazing capacity of 25 acres per AUM for sheep and 33.0 acres per AUM for deer. Using the 25 acres per AUM for sheep and 33.0 acres per AUM for deer would give an initial stocking rate for the North Fremont Allotment of 134 AUMs for sheep and 101 AUMs for wildlife.

In order to determine initial stocking rate for the Loa Winter, Deleeuw, Long Hollow, and Terza Flat Allotments, like vegetative subtypes were selected from the Lyman, Lime Kiln, and Sand Wash Allotments for the comparative analysis. The analysis was based on the dominant use which is sheep and also for wildlife. From the analysis, it is concluded the initial stocking rate of the Loa Winter, Deleeuw, Long Hollow and Terza Flat Allotments can be based on selected, comparable subtypes determined in the 1975-76 range survey of the Lime Kiln, Lyman and Sand Wash Allotments.

Table I-5-2 shows the vegetation subtypes selected by write up number, acres, acres per AUM and calculations of initial stocking rates for the Loa Winter, Deleeuw, Long Hollow, and Terza Flat Allotments.

It is concluded the initial stocking rates of the subject allotments can be justifiably based, as indicated in the preceding analysis, on the 1975-76 range surveys of the selected allotments due to the similarities. However, it

TABLE I-5-1

Comparison of Allotment Vegetation Subtypes (Acreage, Percent)

Allotment	Big Sage	Rabbit-brush	Short Grass	Pinyon Juniper	Snake Weed	Annuals	Total
Bicknell							
(acres)		193	211	928	487		1,819
(percent)		10.6	11.6	51.0	26.8		100
Lyman							
(acres)		260	296	1,432		49	2,037
(percent)		12.8	14.5	70.3		2.4	100
North Fremont							
(acres)	2,429			922			3,351
(percent)	72.5			27.5			100
Hector Hollow							
(acres)	1,082	920					2,002
(percent)	54	46					100

TABLE I-5-2

Initial Stocking Rate Calculations By Comparative Analysis
Vegetation Subtype

		Big Sage	Black Sage	Rabbit-brush	Short grass	Pinyon-Juniper	Annuals	Total
Write up no. for comparative analysis (1975-76 survey)		SDT-5	SDT-5	EM-98	SDT-8	SDT-9	EM-98[a]	
Acres/AUM from above type write up	Sheep	25.0	25.0	36.1	35.3	54.5	36.1	
	Wildlife	33.3	33.3	42.1	66.6	100.0	42.1	
Deleeuw Allot. acres/subtype		2270		302			666	3,234
Deleeuw allot. AUMs/sub-type	Sheep	90.8		8.4			18.4	118
	Wildlife	68.2		7.2			15.8	91
Long Hollow Allot. acres/subtype		2914		4040	654	456		8,064
Long Hollow Allot. AUMs/subtype	Sheep	116.6		111.9	18.5	8.4		255
	Wildlife	87.5		96.0	9.8	4.6		198
Terza Flat Allot. acres/subtype		1769	308	2375	2221	308	297	7,278
Terza Flat Allot. AUMs/subtype	Sheep	70.8	12.3	65.8	62.9	5.7	8.2	226
	Wildlife	53.1	9.2	56.4	33.3	3.1	7.1	162
						TOTAL ACRES		18,580
						TOTAL AUMs	Sheep	599
							Wildlife	451

Calculations to distribute AUMs to Loa Winter allotment and then to Deleeuw, Long Hollow and Terza Flat Allotments:

Loa Winter Sheep $\frac{254}{1075}$ X 599 = 142 AUMs, 599 - 142 = 457 AUMs to be distributed to other three allotments.

Deleeuw Sheep $\frac{118}{599}$ X 457 = 90 AUMs Wildlife 91

Long Hollow Sheep $\frac{255}{599}$ X 457 = 195 AUMS Wildlife 198

Terza Flat Sheep $\frac{226}{599}$ X 457 = 172 AUMs Wildlife 162 should be noted that the stocking rates proposed in this analysis as with any range survey, are only initial stocking rates and that careful monitoring would be needed to verify accuracy. Since livestock forage conditions appear generally better in the comparison allotments than in the subject allotments, the reductions in livestock use proposed in this analysis are most likely conservative.

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[a] The annuals type is comparable in grazing capacity to the rabbitbrush subtype.

APPENDIX I-6

Calculations for Determining Maximum Allowable Utilization on the Nine Allotments Where Continuous-Seasonal Grazing Would Be Adjusted by Utilization

The maximum allowable shares for wildlife and livestock use of the 60 percent allowable use of key species is based on a ratio of current forage allocation for livestock and current forage use or allocation (which ever is greater) for wildlife.

	Current Forage Allocation (AUMS)	Current Forage Use (AUMs)	Maximum Allowable Utilization of the 60 percent	
Allotment	Livestock	Wildlife	Livestock	Wildlife
Busenbark	30 (83%)	6 (17%)	50	10
Donkey Hill	25 (60%)	17 (40%)	40	20
Government Creek	91 (66%)	47 (34%)	40	20
Grover	120 (67%)	58[a] (33%)	40	20
Horse Pasture	14 (45%)	17 (55%)	30	30
River	75 (76%)	24 (24%)	50	10
Spring Branch	11 (21%)	41[a] (79%)	20[b]	40
Teasdale Bench	20 (54%)	17 (46%)	30	30
Teasdale Ranch	80 (88%)	11 (12%)	50	10

[a] Based on allocation.

[b] Modified to allow at least 1/3 of all forage for livestock.

APPENDIX I-7

Wildlife Reservations

The following table shows allotment wildlife reservation as compared to UDWR's estimated wildlife needs in the continue existing continuous-seasonal grazing component of the proposal. The table shows that the wildlife reservation exceeds UDWR estimates of wildlife needs in six allotment by 1,744 AUMs. These excess 1,744 AUMs would be allocated to watershed, aesthetics, and threatened or endangered species in the proposal.

Allotment	Wildlife Reservation (AUMs)	UDWR's Estimate of Future Wildlife Needs (AUMs)	Excess AUMs
Cedar Peak	391	205	186
Hare Lake	325	134	191
Smooth Knoll	629	133	496
Flat Top	526	255	271
King Sheep	114	114	0
Co-op	279	125	154
Cyclone	661	215	446
Post Hollow	132	132	0
Total	3,057	1,202	1,744

In addition, there are 65 AUMs currently unusable by livestock or big game on the Brian, Rees, Tanner, and Taylor Farm allotments, contributing to a grand total of 1,809 excess AUMs.

APPENDIX II-1

Explanation of Terms Used to Describe Properties of Soil Associations

Notes

1. Depth: Used to describe the thickness of a soil over bedrock.

2. ERD: Effective root depth--the depth of soil material that roots penetrate readily for water and nutrients.

3. Texture: The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are sand, loamy sand, sandy loam, loam, silty loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, and clay. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

4. Structure: The combination or arrangement of primary soil particles into secondary particles, units, or peds.

5. pH: The degree of acidity or alkalinity of a soil. Seven is neutral, lower numbers are acidic; higher numbers are basic soils. Basic soils are often saline.

6. Drainage: The relative rapidity and extent of the removal of water from on and within the soil under natural conditions. Terms commonly used to describe drainage area:

   Excessively drained. Water is removed from the soil rapidly. The soils are typically sandy and porous.

   Well-drained. Water is removed from the soil readily but not rapidly. There is no evidence of wetness above a depth of 40 inches.

   Moderately well-drained. Water is removed from the soil slowly enough to keep it wet for significant periods but not all the time. Wetness is apparent between a depth of 20 and 40 inches.

   Somewhat poorly drained. Water is removed from the soil slowly enough to keep it wet for significant periods but not all the time. Wetness is apparent between a depth of 20 and 40 inches.

   Poorly drained. Water is removed from the soil so slowly that the water table is near the surface most of the time. Wetness is apparent within 20 inches of the surface.

   Very poorly drained. Water is removed from the soil so slowly that the water table is at or on the surface most of the time. These soils are gnenerally in low areas or depressions.

7. Average Water Capacity: The capacity of a soil to retain water in a form available to plants. The AWC was estimated using data provided by the SCS and by utilizing the representative soil series.

8. Parent Material: Unconsolidated and partially weathered geologic material from which soils are presumed to form.

9. Slope: Slope is expressed as a percent (number of feet of vertical rise or fall in 100 feet horizontal distance). Slopes greater than 20 percent are not suited for any mechanical vegetation manipulation.

10. Permeability: That quality of the soil that enables it to transmit water or air. Terms used to describe permeability in inches per hour are: Very slow, less than 0.06 inch; slow, 0.06 to 0.2 inch; moderately slow, 0.2 to 0.6 inch; moderate, 0.6 to 2.0 inches; moderately rapid, 2.0 to 6.0 inches; rapid, 6.0 to 20.0 inches; and very rapid, more than 20 inches.

11. Runoff: The rate at which water flows from the land surface. Relative terms used to describe runoff are very rapid, rapid, medium, slow, very slow, and ponded.

12. Sediment Yield:
    Low = <0.5 acre-foot per square mile per year. Moderate = 0.5 to 1.0 acre-foot per square mile per year. High = 1.0 to 3.0 acre-foot per square mile per year. Very high = >3.0 acre-foot per square mile per year.

13. Hydrologic Group: The hydrologic soil groups are used to estimate runoff from rainfall. Soil properties which are considered are those that influence the rate of infiltration obtained from a bare soil after prolonged wetting. Soil properties considered are: (1) depth of seasonably high water table, (2) intake rate and permeability after prolonged wetting, (3) depth to very slowly permeable layer. The soils have been classified into four groups, A through D. Group A soils have low runoff potential; group B soils have moderately low runoff potential; group C soils have moderately high runoff potential; and group D soils have high runoff potential.

14. Gravel = rocks 1/8 inch to 3 inches in diameter. Cobbles = rocks 3 inches to 10 inches in diameter. Stones = rocks >10 inches in diameter.

15. Seeding Success: An estimate of the percent of the seedings that would be successful on the soil, based on precipitation, soil depth, etc.

APPENDIX I1-2

Soil Associations for Wayne County
As Determined by the Soil Conservation Service
in 1969 and 1970

Soils of the Moist Subhumid Mountain Areas (2)

2. This association consists principally of deep to moderately deep well-drained soils. The textures in the profiles range from sandy loam to clay, but more common they are loam and clay loam. Some soils are free from rocks; others have gravel, cobbles or stones on the surface or throughout the soil, ranging from a few up to about 50 percent. Rarely do they exceed 50 percent. These soils occur on mountain slopes, ridges, plateaus, benches, valleys and occasionally on alluvial fans. Slopes range from 1 to 40 percent, but are dominantly from 5 to 30 percent. Erosion is slight to severe, a few soils have active erosion and contribute to sediment problems, but as a whole these soils do not have major erosion or sediment problems. Runoff is slow to medium; occasionally runoff is rapid, but this is not too common.

Native vegetation includes oakbrush, big sagebrush, black sagebrush, snowberry, elderberry, chokecherry, bitterbrush, birchleaf mahogany, Ponderosa pine, Douglas fir, mountain mahogany, aspen, fescue grasses, mountain brome, bluegrasses, Letterman's needlegrass, slender wheatgrass, lupine, peavine, balsamroot, and asters.

The average annual precipitation is 18 to 25 inches. The mean annual temperature is 36 to 42°F, mean summer temperature 52 to 62°F, and the frost-free period 60 to 85 days. The elevation varies considerably depending on location, with ranges from 7,500 to 9,000 feet, and more common elevations at 8,000 to 8,500 feet.

These soils are used for livestock and big game summer range, recreation, timber production, and watersheds. Grazing values likely exceed those of other uses. In parts of the resource area, these soils are very important for production of saw timber. Seventy to eighty percent of soils in this association have soils and slopes that are suitable for clearing and mechanical seeding. Some soils have vegetative obstruction such as oakbrush or timber that are otherwise suitable for seeding.

Inclusions consist of some wet meadows with poorly drained soils at some small areas where the soils are too steep, shallow, or rocky for seeding, but which have value for range use. There are also small areas of rockland, rock outcrops, and lava flows that have no agricultural value.

Soils of the Dry Subhumid Upland Areas (4-7)

4. The soils of this association are deep and well-drained. The texture in the profiles ranges from sandy loam to clay, with loams and clay loams more common. Most of these soils are free from rocks, but there are some areas that have gravel or cobbles in the surface or throughout the soil (amounting to less than 25 percent of the soils in this association). They occur on alluvial fans, alluvial valleys, lake terraces, and benches. Slopes range from 1 to 15 percent, but are dominantly 2 to 6 percent. Erosion is slight to moderate and is usually not a problem. Runoff is slow to medium.

Native vegetation includes native bluegrasses, bluebunch wheatgrass, western wheatgrass, Indian ricegrass, squirreltail, balsamroot, aster, hawksbeard, big sagebrush, bitterbrush, needlegrass and yellowbrush.

The average annual precipitation is 12 to 16 inches. The mean annual temperature is 44 to 53°F, mean summer temperature 62 to 74°F, and the frost-free period 115 to 145 days. The elevation varies considerably depending on the location; the range is 4,900 to 7,500 feet. Most of the present dry cropland occurs between 5,000 and 6,000 feet.

These soils are used for irrigated and nonirrigated cropland and for spring or fall rangeland. The soils in this association are all arable and could be irrigated if irrigation water was available. They are all suitable for range seeding, but some areas are marginal for dry cropland because of inadequate precipitation.

Inclusions are small areas that are very gravelly or on steep slopes that are not suitable for irrigation.

6. The soils of this association are moderately deep to deep and well-drained. The textures in the profiles range from sand to clay, but are more commonly sandy loam to clay loam. Some soils are free from rocks, but others have gravel, cobbles, or stones in the surface or throughout the soil, ranging from a few up to 70 percent. Lime horizons are common. These soils occur on alluvial fans, benches, ridges, mountain slopes, and undulating hills. Slopes range from 1 to 40 percent, but are dominantly from 10 to 40 percent. Erosion is slight to severe. Soils that have thick stands of juniper and pinyon vegetation usually have moderate to severe erosion. Runoff is medium to rapid.

Native vegetation includes big sagebrush, juniper, pinyon pine, oakbrush, bitterbrush, black sagebrush, yellowbrush, Indian ricegrass, native bluegrass, bluebunch wheatgrass, squirreltail, sand dropseed, needle-and-thread grass, lupine, and hawksbeard.

The annual precipitation is 11 to 18 inches. The mean annual temperature is 42 to 54°F, mean summer temperature is 58 to 74°F, and the frost-free period 80 to 145 days. The elevation varies considerably, depending on location; range is from 5,400 to 8,800 feet.

These soils are used for rangeland; usually spring or fall range for livestock and winter range for big game. They are used for some recreation. These soils are not suitable for cropland because of steep slopes and some areas which are too gravelly or cobbly, but they are generally suitable for clearing and mechanical seeding of range grasses. However, there are some soils that are not suitable for seeding (less than 25 percent of the soils in the association). There are inclusions of small areas of rockland and a few small alluvial valleys.

7. The soils of this association are deep to moderately deep, well-drained, on steep and very steep slopes, or shallow and rocky, or very cobbly on gently sloping to very steep slopes. Textures in the profiles range from sand to clay, more commonly from sandy loam to clay loam. These soils are usually gravelly, cobbly, or stony, and range from 30 to 80 percent. Occasionally soils free from gravel, cobbles, and stones occur. Lime horizons are common. These soils occur on alluvial fans, benches, ridges, mountain slopes, and undulating hills. Slopes range from 1 to 70 percent, but are dominantly from 30 to 50 percent. Erosion is slight to severe; these soils usually have erosion problems and contribute to sources of sediment in the lower areas. The soils that have a thick stand of juniper and pinyon pine vegetation are usually where the more serious erosion occurs. Runoff is medium to rapid.

Native vegetation includes pinyon pine, juniper, big sagebrush, black sagebrush, birchleaf mahogany, mountain mahogany, bitterbrush, oakbrush, yellowbrush, serviceberry, bluebunch wheatgrass, native bluegrass, Indian ricegrass, squirreltail, sand dropseed, aster, and daisy.

The annual precipitation is 11 to 18 inches. The mean annual temperature is 42 to 54°F, mean summer temperature 58 to 74°F, and the frost-free period 80 to 145 days. The elevation varies considerably depending on location, with ranges from 4,000 to 8,800 feet; and more commonly 6,000 to 8,500 feet.

These soils are used for livestock and big game range. In parts of the resource area, they also have value as recreation areas. These soils are not suitable for cropland. With the exception of a few small areas, more than 80 percent of the total area mapped is suitable for clearing or mechanical range seeding. Some areas could be seeded by hand or airplane. There are inclusions of small areas of rock outcrops and rockland.

Soils of the Semidesert Areas (8-10)

8. The soils of this associaiton are deep and well-drained. The texture in the profiles ranges from sandy loam to clay, more commonly loam and clay loam. Most of the soils are free from gravel or cobbles; however, there are some areas that have gravel or cobbles in the surface or throughout the soil (less than 25 percent of the soils in this association). Most of them have developed only weak horizons, and occur on alluvial fans, alluvial valleys, lake terraces, benches, and flood plains. Slopes range from 0 to 10 percent, but are dominantly 1 to 6 percent. Erosion is slight to moderate, and runoff slow to medium. There are a few soils that are high in gypsum and cause settlement problems when they are irrigated; they also cause problems in construction work.

Native vegetation includes big sagebrush, western wheatgrass, needle-and-thread grass, native bluegrass, Indian ricegrass, bluebunch wheatgrass, black sagebrush, yellowbrush, shadscale, budsage, winterfat and Brigham tea.

The average annual precipitation is 8 to 12 inches. The mean annual temperature is 42 to 52°F, mean summer temperature 61 to 73°F, and the frost-free period 80 to 135 days. The elevation ranges from 4,600 to 7,100 feet.

These soils are used for irrigated cropland and for spring, fall, and occasionally winter range for livestock. They are arable and could be irrigated if irrigation water were available. They are too dry for dry cropland, and with the exception of a few wet years, they are too dry for range seeding.

Inclusions are a few small areas too gravelly, steep, or wet for irrigated land use.

10. The soils of this association are deep to moderately deep, well-drained soils on rolling, hilly, moderately steep to very steep slopes, or shallow, rocky or very cobbly soils on gentle to very steep slopes. Textures in the profiles range from sand to clay, more commonly from sandy loam to clay loam. These soils are usually gravelly, cobbly, or stony (from 30 to 80 percent). Occasional soils are free from gravel, cobbles, or stones. Most of the soils have developed only weak horizons. The soils occur on foothills, alluvial fans, lake terraces, ridges, benches, and occasionally, flood plains. Slopes range from 1 to 70 percent, but are dominantly 10 to 50 percent. Erosion is slight to severe; some of the shallow soils over bedrock that is steep or very steep have erosion problems and produce sediment to the lower lands. Runoff is slow to rapid.

Native vegetation includes big sagebrush, black sagebrush, yellowbrush, rubber rabbitbrush, budsage, shadscale, greasewood, fourwing saltbush, Brigham tea, winterfat, Indian ricegrass, squirreltail, needle-and-thread grass, Sandberg bluegrass, bluebunch wheatgrass, western wheatgrass, blue grama, galleta and, occasionally, juniper.

The average annual precipitation is 8 to 12 inches. The mean annual temperature is 42 to 52°F, mean summer temperature 61 to 73°F, and the frost-free period is 80 to 135 days. The elevation ranges from 4,800 to 7,800 feet.

These soils are used for spring, fall or winter range for livestock and have a very limited use for winter range for big game. They are not suitable for irrigated or dry cropland, and with the exception of a few wet years, they are too dry for range seeding.

Inclusions are a few areas that are arable, some rockland and rock outcrops.

Miscellaneous Wastelands (17)

17. This association consists of 50 to 100 percent of the following combination of miscellaneous land types: rock outcrops, rockland, lava flows, stony land, rough broken land and badland. The associated soils are usually shallow and well-drained, and are commonly gravelly, cobbly or stony. Slopes and texture vary widely. This association occurs from the desert areas to the high mountain area and has a very limited value for livestock grazing and wildlife. Some areas have very high values for recreation; these include the National Parks and monuments in the resource area. The runoff is rapid to very rapid and at times damage is caused to the lower-lying lands.

The hydrologic aspect is much different in the mountain and high mountain areas than in the semidesert and desert areas. The higher areas have considerable value for watersheds. The snow stays much of the year on the north-facing slopes of some of the rockland and rock outcrops. The lower elevations usually have little value for watersheds, and have very rapid runoff during high-intensity summer rains.

Table II-3-1
Parker Mountain - Entire Planning Unit

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SEDIMENT YIELD FACTOR RATING

	SURFACE GEOLOGY (a)	SOILS (b)	CLIMATE (c)	RUNOFF (d)	TOPOGRAPHY (e)
	(10) a. Marine shales and related mudstones and siltstones	(10) a. Fine textured; easily dispersed; saline-alkaline; high shrink-swell characteristics b. Single grain silts and fine sands	(10) a. Storms of several days' duration with short periods of intense rainfall b. Frequent intense convective storms c. Freeze-thaw occurrence	(10) a. High peak flows per unit area b. Large volume of flow per unit area	(20) a. Steep upland slopes (in excess of 30%) b. High relief; little or no floodplain development
	(5) a. Rocks of medium hardness b. Moderately weathered c. Moderately fractured	(5) a. Medium textured soil b. Occasional rock fragments c. Caliche layers	(5) a. Storms of moderate duration and intensity b. Infrequent convective storms	(5) a. Moderate peak flows per unit area b. Moderate volume of flow per unit area	(10) a. Moderate upland slopes (less than 20%) b. Moderate fan or floodplain development
	(0) a. Massive, hard formations	(0) a. High percentage of rock fragments b. Aggregated clays c. High in organic matter	(0) a. Humid climate with rainfall of low intensity b. Precipitation in form of snow c. Arid climate, low intensity storms d. Arid climate; rare convective storms	(0) a. Low peak flows per unit area b. Low volume of runoff per unit area c. Rare runoff events	(0) a. Gentle upland slopes (less than 5%) b. Extensive alluvial plains
Factor value	5	0	5	5	10

	GROUND COVER (f)	LAND USE (g)	UPLAND EROSION (h)	CHANNEL EROSION AND SEDIMENT TRANSPORT (i)
	(10) Ground cover does not exceed 20% a. Vegetation sparse; little or no litter b. No rock in surface soil	(10) a. More than 50% cultivated b. Almost all of area intensively grazed c. All of area recently burned	(25) a. More than 50% of the area characterized by rill and gully or landslide erosion	(25) a. Eroding banks continuously or at frequent intervals with large depths and long flow duration b. Active headcuts and degradation in tributary channels
	(0) Cover not exceeding 40% a. Noticeable litter b. If trees present understory not well developed	(0) a. Less than 25% cultivated b. 50% or less recently logged c. Less than 50% intensively grazed d. Ordinary road and other construction	(10) a. About 25% of the area characterized by rill and gully or landslide erosion b. Wind erosion with deposition in stream channels	(10) a. Moderate flow depths, medium flow duration with occasionally eroding banks or bed
	(−10) a. Area completely protected by vegetation, rock fragments, litter b. Little opportunity for rainfall to reach erodible material	(−10) a. No cultivation b. No recent logging c. Low intensity grazing	(0) a. No apparent signs of erosion	(0) a. Wide shallow channels with flat gradients and short flow duration b. Channels in massive rock, large boulders, or well vegetated c. Artificially controlled channels
Factor value	10	0	10	10

Subtotal (a) – (g) 35

Subtotal (h) – (i) 20

TOTAL RATING 55 = 0.6 ac.ft./sq. mi./yr.

(Instructions on reverse)

Form 7310–16 (July 1971)

Table II-3-2
Parker Mountain - Below the Narrows

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SEDIMENT YIELD FACTOR RATING

SURFACE GEOLOGY (a)	SOILS (b)	CLIMATE (c)	RUNOFF (d)	TOPOGRAPHY (e)
(10) a. Marine shales and related mudstones and siltstones	(10) a. Fine textured; easily dispersed; saline-alkaline; high shrink-swell characteristics b. Single grain silts and fine sands	(10) a. Storms of several days' duration with short periods of intense rainfall b. Frequent intense convective storms c. Freeze-thaw occurrence	(10) a. High peak flows per unit area b. Large volume of flow per unit area	(20) a. Steep upland slopes (in excess of 30%) b. High relief; little or no floodplain development
(5) a. Rocks of medium hardness b. Moderately weathered c. Moderately fractured	(5) a. Medium textured soil b. Occasional rock fragments c. Caliche layers	(5) a. Storms of moderate duration and intensity b. Infrequent convective storms	(5) a. Moderate peak flows per unit area b. Moderate volume of flow per unit area	(10) a. Moderate upland slopes (less than 20%) b. Moderate fan or floodplain development
(0) a. Massive, hard formations	(0) a. High percentage of rock fragments b. Aggregated clays c. High in organic matter	(0) a. Humid climate with rainfall of low intensity b. Precipitation in form of snow c. Arid climate, low intensity storms d. Arid climate; rare convective storms	(0) a. Low peak flows per unit area b. Low volume of runoff per unit area c. Rare runoff events	(0) a. Gentle upland slopes (less than 5%) b. Extensive alluvial plains
Factor value 5	10	5	5	10

GROUND COVER (f)	LAND USE (g)	UPLAND EROSION (h)	CHANNEL EROSION AND SEDIMENT TRANSPORT (i)
(10) Ground cover does not exceed 20% a. Vegetation sparse; little or no litter b. No rock in surface soil	(10) a. More than 50% cultivated b. Almost all of area intensively grazed c. All of area recently burned	(25) a. More than 50% of the area characterized by rill and gully or landslide erosion	(25) a. Eroding banks continuously or at frequent intervals with large depths and long flow duration b. Active headcuts and degradation in tributary channels
(0) Cover not exceeding 40% a. Noticeable litter b. If trees present understory not well developed	(0) a. Less than 25% cultivated b. 50% or less recently logged c. Less than 50% intensively grazed d. Ordinary road and other construction	(10) a. About 25% of the area characterized by rill and gully or landslide erosion b. Wind erosion with deposition in stream channels	(10) a. Moderate flow depths, medium flow duration with occasionally eroding banks or bed
(–10) a. Area completely protected by vegetation, rock fragments, litter b. Little opportunity for rainfall to reach erodible material	(–10) a. No cultivation b. No recent logging c. Low intensity grazing	(0) a. No apparent signs of erosion	(0) a. Wide shallow channels with flat gradients and short flow duration b. Channels in massive rock, large boulders, or well vegetated c. Artificially controlled channels
Factor value 10	0	25	25

Subtotal (a) – (g) 45	Subtotal (h) – (i) 50	TOTAL RATING 95 = 2.5 ac.ft./sq. mi./yr.

(Instructions on reverse)

Form 7310–16 (July 1971)

Table II-3-3
Parker Mountain - Above the Narrows

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SEDIMENT YIELD FACTOR RATING

SURFACE GEOLOGY (a)	SOILS (b)	CLIMATE (c)	RUNOFF (d)	TOPOGRAPHY (e)
(10) a. Marine shales and related mudstones and siltstones	(10) a. Fine textured; easily dispersed; saline-alkaline; high shrink-swell characteristics b. Single grain silts and fine sands	(10) a. Storms of several days' duration with short periods of intense rainfall b. Frequent intense convective storms c. Freeze-thaw occurrence	(10) a. High peak flows per unit area b. Large volume of flow per unit area	(20) a. Steep upland slopes (in excess of 30%) b. High relief; little or no floodplain development
(5) a. Rocks of medium hardness b. Moderately weathered c. Moderately fractured	(5) a. Medium textured soil b. Occasional rock fragments c. Caliche layers	(5) a. Storms of moderate duration and intensity b. Infrequent convective storms	(5) a. Moderate peak flows per unit area b. Moderate volume of flow per unit area	(10) a. Moderate upland slopes (less than 20%) b. Moderate fan or floodplain development
(0) a. Massive, hard formations	(0) a. High percentage of rock fragments b. Aggregated clays c. High in organic matter	(0) a. Humid climate with rainfall of low intensity b. Precipitation in form of snow c. Arid climate, low intensity storms d. Arid climate; rare convective storms	(0) a. Low peak flows per unit area b. Low volume of runoff per unit area c. Rare runoff events	(0) a. Gentle upland slopes (less than 5%) b. Extensive alluvial plains
Factor value 5	0	5	0	10

GROUND COVER (f)	LAND USE (g)	UPLAND EROSION (h)	CHANNEL EROSION AND SEDIMENT TRANSPORT (i)
(10) Ground cover does not exceed 20% a. Vegetation sparse; little or no litter b. No rock in surface soil	(10) a. More than 50% cultivated b. Almost all of area intensively grazed c. All of area recently burned	(25) a. More than 50% of the area characterized by rill and gully or landslide erosion	(25) a. Eroding banks continuously or at frequent intervals with large depths and long flow duration b. Active headcuts and degradation in tributary channels
(0) Cover not exceeding 40% a. Noticeable litter b. If trees present understory not well developed	(0) a. Less than 25% cultivated b. 50% or less recently logged c. Less than 50% intensively grazed d. Ordinary road and other construction	(10) a. About 25% of the area characterized by rill and gully or landslide erosion b. Wind erosion with deposition in stream channels	(10) a. Moderate flow depths, medium flow duration with occasionally eroding banks or bed
(−10) a. Area completely protected by vegetation, rock fragments, litter b. Little opportunity for rainfall to reach erodible material	(−10) a. No cultivation b. No recent logging c. Low intensity grazing	(0) a. No apparent signs of erosion	(0) a. Wide shallow channels with flat gradients and short flow duration b. Channels in massive rock, large boulders, or well vegetated c. Artificially controlled channels
Factor value 5	0	10	10

Subtotal (a) – (g) 25	Subtotal (h) – (i) 20	TOTAL RATING 45 = 0.4 ac.ft./sq. mi./yr.

(Instructions on reverse)

Form 7310–16 (July 1971)

GENERAL INSTRUCTIONS

District Office prepares one copy for District file.

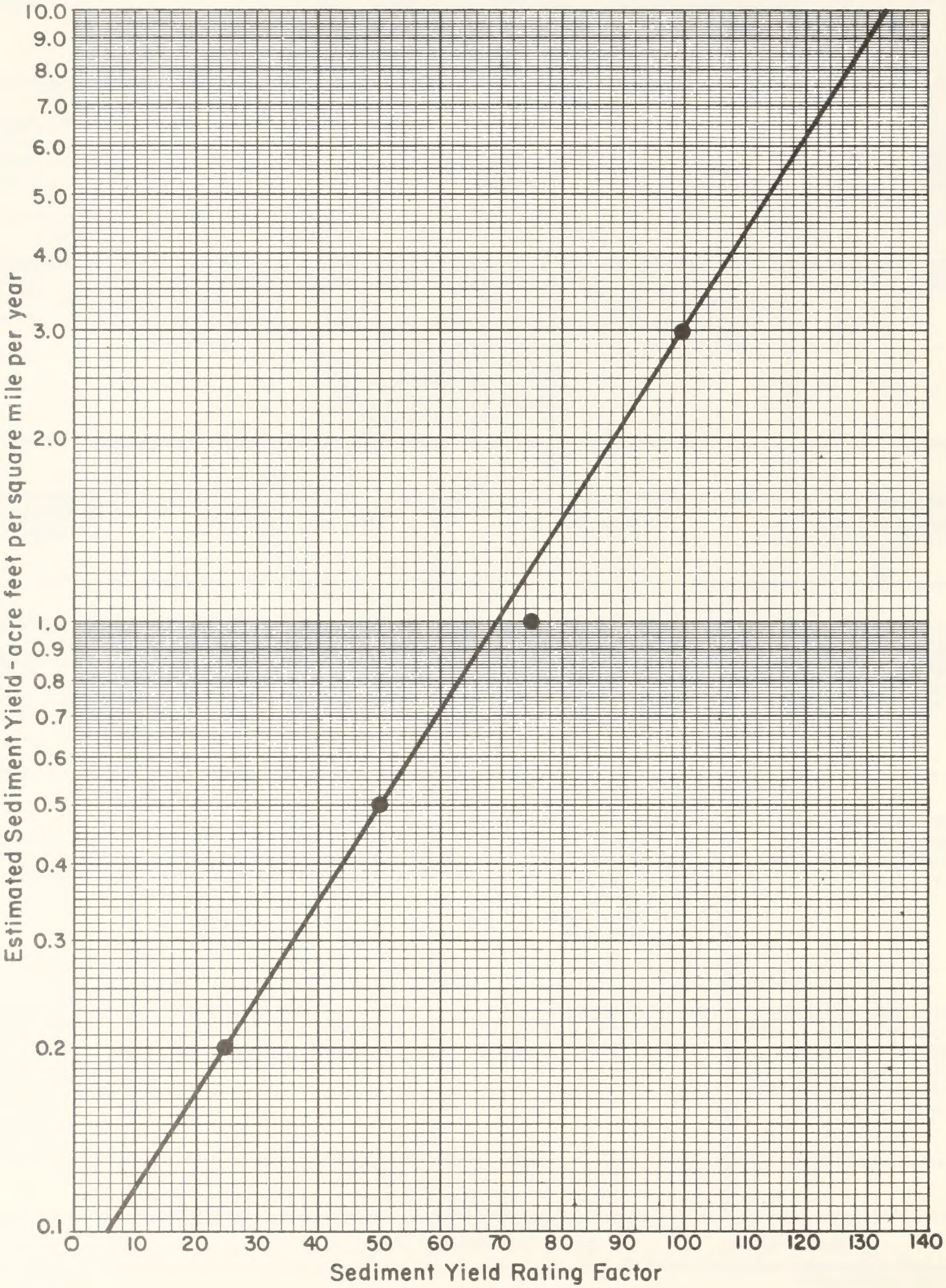
SPECIFIC INSTRUCTIONS

(Items not listed are self-explanatory)

Numbers indicate values assigned appropriate characteristics. Letters a, b, c, and d refer to independent characteristics to which full value may be assigned.

Interpolation between the sediment yield levels may be made. High values for columns (a) through (g) should correspond to high values for (h) and (i). If they do not, factors (a) through (g) should be reevaluated. If they do not correspond, then a special erosion condition exists.

Convert *Total Rating* to sediment yield by use of graph.



APPENDIX II-4

Pacific Southwest Inter-Agency Committee (PSIAC) Methodology for Estimating Sediment Yield on Semiarid Watersheds and Relationship to Bureau of Land Management Inventory Data Base

Abstract

A method for estimating sediment yield on ungaged watershed with little available hydrologic data is needed to quantify sediment for the present and future situations in environmental statements, resource activity plans, and other proposed actions affecting the soil and water resources. Phase I Watershed Conservation and Development (WC&D) System data was correlated with gaged sediment production or PSIAC methodology estimates on 21 watersheds ranging in size from 0.67 to 698 square miles. These watersheds for which correlations were developed are in arid and semiarid areas of east-central Oregon, north-central New Mexico, southeast Arizona, northeast Nevada, southern Utah, and southwest Idaho. Areas represent a variety of geology, climate, ecology, and topography conditions. Estimates of sediment yield correlated closely with reservoir, wier, and/or sediment sampler measurements (where available), with Phase I WC&D data and other unit resource analysis physical profile data.

This method is designed to make comparative sediment classifications for areas between 0.1 square mile to 50 square miles depending upon resource inventory and sampling intensity.

Procedure

The universal soil loss equation predicts soil loss from an area, but must be used with a sediment transport model and a channel erosion model to arrive at total sediment production. Therefore, the PSIAC method of estimating sediment production is the only available method for estimating total sediment production for both present and future conditions (see BLM 7317).

The method consists of rating the watershed on the basis of nine factors shown on following Table II-4-1 and on Form 7310-16 "Sediment Yield Factor Rating."

A numerical rating is developed by summing the values assigned to be factors based on lndscape characteristics and judgment. A suggested range of values for each factor is included in the table. If a factor would likely result in a small sediment yield, a value near the lower end of the range is assigned. A value near the upper end of the range is assigned when a factor would cause a large sediment yield. Some examples are:

Factor	High Values	Low Values
Geology	soft fissile shale	thick basalt flow
Soils	silty clay	loamy sand
Climate	>50 percent rainfall precip.	>50 percent snow precip.
Runoff	August peak flow.	April peak flow
Topography	exceeding 30 percent slope	less than 5 percent slope
Ground Cover	less than 30 percent	greater than 70 percent
Land Use (Grazing)	>50 percent use	<20 percent use
Upland Erosion Sediment Transport	headcuts and/or eroding banks	flat gradients and/or vegetated

TABLE II-4-1

Rating Ranges and Descriptive Characteristics of Sediment Factors

Factor	Rating Range	Main Characteristics Considered
Surface geology	0-10	Rock type, weathering, hardness, and fracturing.
Soils	0-10	Texture, Salinity, Aggregation, caliche, shrink-swell, organic matter, and rockiness.
Climate	0-10	Storm frequency, intensity, and duration. Snow and freeze-thaw.
Runoff	0-10	Volume per unit area and peak flow per unit area.
Topography	0-20	Steepness of upland slopes, relief, fan and flood plain development.
Ground cover	-10-10	Vegetation, litter, rocks, and understory development under trees.
Land use	-10-10	Percentage cultivated, grazing intensity, logging, and roads.
Upland erosion	0-25	Rills and gullies, landslides, and wind deposits in channels.
Channel erosion and sediment transport.	0-25	Bank and bed erosion, flow depths, active headcuts, and channel vegetation.

Each factor except topography is paired with another factor that has a similar influence on sediment yield. The pairings are surface geology and soils, climate and runoff, ground cover and land use, and upland erosion and channel erosion--sediment transport. Each factor is rated separately, but pairs are generally interdependent of each.

The upland erosion and channel erosion-sediment transport factors are dependent on the other seven factors; therefore, high values for the two erosion factors should correspond to high values for the other seven. If ratings do not correspond either special erosion conditions exist or reevaluation should be considered. The numbers are assigned to the factors, are summed, and the rating value is used obtain a probable sediment yield range and class as shown in Table II-4-2.

TABLE II-4-2

Rating Ranges and Classes for Evaluating Sediment Yields Using Terrain Characteristics

Rating Ranges	Sediment Yield Range Ac. ft./sq. mi.	Tons/Ac.[a]	Rating Class
>100	>3.0	>8.7	Extreme
75-100	1.0-3.0	2.9 -8.7	Heavy
50-75	0.5-1.0	1.45-2.9	Moderate
25-50	0.2-0.5	0.58-1.45	Slight
0-25	<0.2	<0.58	Negligible

[a] Assuming 85 lb./cu.ft.

To statistically compare estimated sediment yields with any measured sediment yields, reservoirs, wiers, traps, etc., it is necessary to obtain a specific value for the estimate rather than a range of values. Figure II-3-1 in Appendix II-4 was prepared by plotting the upper values of the rating ranges and those of the corresponding sediment yield estimates. PSIAC conversion factors are shown in Table II-4-3.

With the PSIAC method in mind WC&D System guidance--Manual 7322--is utilized for the basic inventory of ground cover, soils--if adequate soil survey is not available, topograhy, upland erosion, and channel erosion-sediment transport. The climate, runoff, surface geology, and land use data may be analyzed from the unit resource analysis (URA), other resource inventories, etc.

TABLE II-4-3

PSIAC Conversion Factors

Factor	Yield	Factor	Yield	Factor	Yield
1	0.0	34	0.28	67	0.91
2	0.0	35	0.29	68	0.95
3	0.0	36	0.30	69	0.98
4	0.0	37	0.31	70	1.00
5	0.0	38	0.32	71	1.08
6	0.1	39	0.335	72	1.15
7	0.1	40	0.35	73	1.18
8	0.11	41	0.36	74	1.20
9	0.11	42	0.375	75	1.23
10	0.12	43	0.38	76	1.25
11	0.12	44	0.40	77	1.30
12	0.13	45	0.40	78	1.35
13	0.13	46	0.42	79	1.40
14	0.135	47	0.44	80	1.45
15	0.140	48	0.46	81	1.50
16	0.145	49	0.48	82	1.55
17	0.150	50	0.50	83	1.60
18	0.155	51	0.52	84	1.70
19	0.160	52	0.53	85	1.75
20	0.170	53	0.55	86	1.80
21	0.175	54	0.56	87	1.85
22	0.180	55	0.58	88	1.95
23	0.185	56	0.60	89	2.00
24	0.195	57	0.63	90	2.1
25	0.20	58	0.65	91	2.15
26	0.21	59	0.68	92	2.20
27	0.215	60	0.70	93	2.30
28	0.225	61	0.73	94	2.40
29	0.235	62	0.75	95	2.50
30	0.24	63	0.79	96	2.60
31	0.255	64	0.82	97	2.70
32	0.26	65	0.85	98	2.80
33	0.27	66	0.87	99	2.90
				100	3.00

APPENDIX II-5

Runoff Curve Number Calculations

Water and sediment yield of a particular watershed are the function of several factors. Precipitation (both total amount and the form in which it occurs) determines the quantity of water available, while actual runoff and timing of that runoff (as well as sediment yield) are determined by the intensity of storms, the soil types present, slope, watershed shape, vegetative cover, and land use.

A Runoff Curve Number (RCN) can be obtained which considers all these factors. Several charts and graphs have been developed and used by SCS to determine the RCN. Two of these graphs fit the particular vegetation type of the Parker Mountain Planning Unit. These graphs are shown as Figures II-5-1 and -2. They were converted to tables with number values. The tables follow the graphs, and are numbered as Table II-5-1 through -3.

The ground cover density (in percent) was taken from Vegetation Table 2-4 on the text. The hydrologic soil groups were taken from and are shown on Figure II-5-3. By use of the two graphs, curve numbers were determined for each vegetation type of each of the six segments of the proposed action.

After the RCNs were determined, they were applied to the third graph, Figure II-5-4, to obtain expected direct runoff for a two-hour storm producing 1.1 inches of precipitation (the ten-year frequency storm). The graph was converted to number values in Table II-5-4, and results of the calculations are shown in Table 2-8.

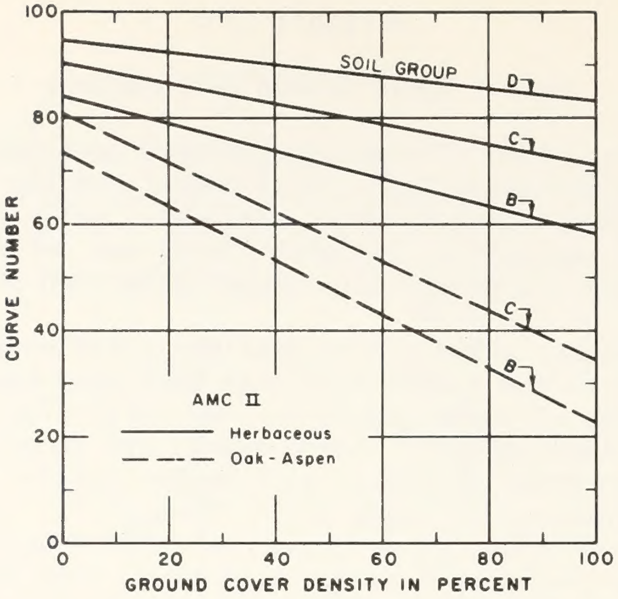


Figure II-5-1 --Graph for estimating runoff curve numbers of forest-range complexes in western United States: herbaceous and oak-aspen complexes.

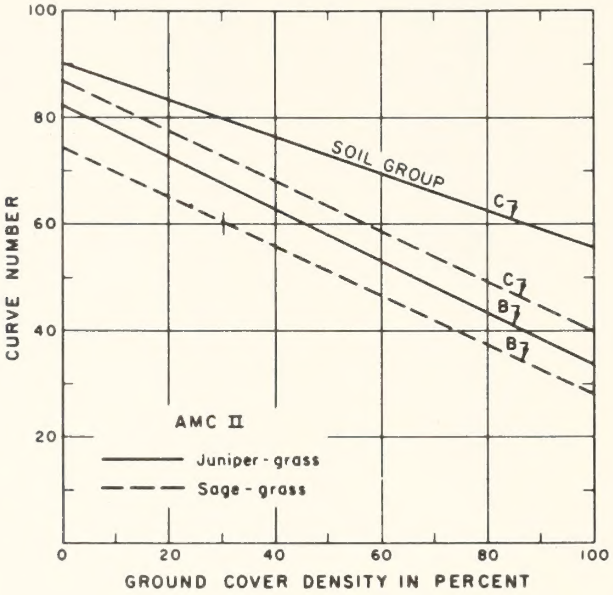


Figure II-5-2 --Graph for estimating runoff curve numbers of forest-range complexes in western United States: juniper-grass and sage-grass complexes.

TABLE II-5-1

RCN Herbaceous Soil Groups

Ground Cover	B	C	D
0	84	90	95
2	84	90	95
4	83	89	95
6	82	89	94
8	82	88	94
10	81	88	94
12	81	88	94
14	80	87	94
16	80	87	93
18	79	86	93
20	79	86	93
22	78	86	93
24	78	85	93
26	76	85	92
28	76	84	92
30	75	84	92
32	75	84	92
34	74	83	92
36	74	83	91
38	74	82	91
40	73	82	91
100	58	71	

TABLE II-5-2

RCN Pinyon-Juniper-Grass Soil Groups

Ground Cover	B	C	D
0	82	91	99
2	81	91	99
4	80	90	98
6	79	89	98
8	78	89	97
10	77	88	97
12	76	87	96
14	75	87	96
16	74	86	95
18	73	85	95
20	72	85	94
22	71	84	94
24	70	83	93
26	69	83	93
28	68	82	92
30	67	81	92
32	66	81	91
34	65	80	91
36	64	79	90
38	63	78	90
40	62	78	89
100	24	56	76

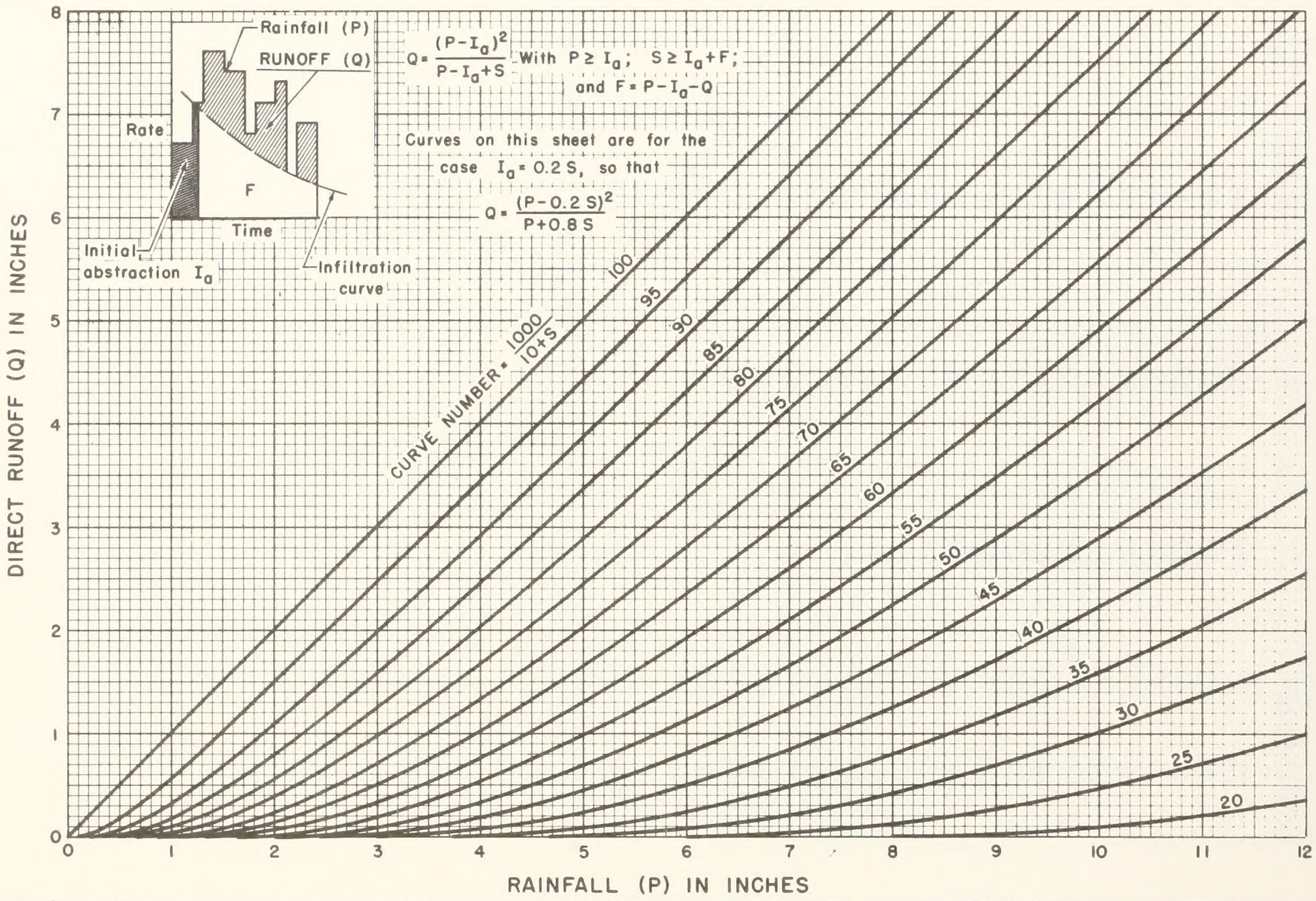
TABLE II-5-3

RCN Sage-Grass Soil Groups

Ground Cover	B	C	D
0	74	88	98
2	73	87	97
4	72	86	96
6	71	85	95
8	70	84	94
10	69	83	93
12	68	82	92
14	67	81	91
16	66	80	90
18	65	79	89
20	64	78	88
22	63	77	87
24		76	86
26		75	85
28		74	84
30		73	83
32		72	82
34		71	81
36		70	80
38			79
40			78
100	24	39	52

HYDROLOGY: SOLUTION OF RUNOFF EQUATION $Q = \frac{(P-0.2S)^2}{P+0.8S}$

P = 0 to 12 inches
Q = 0 to 8 inches

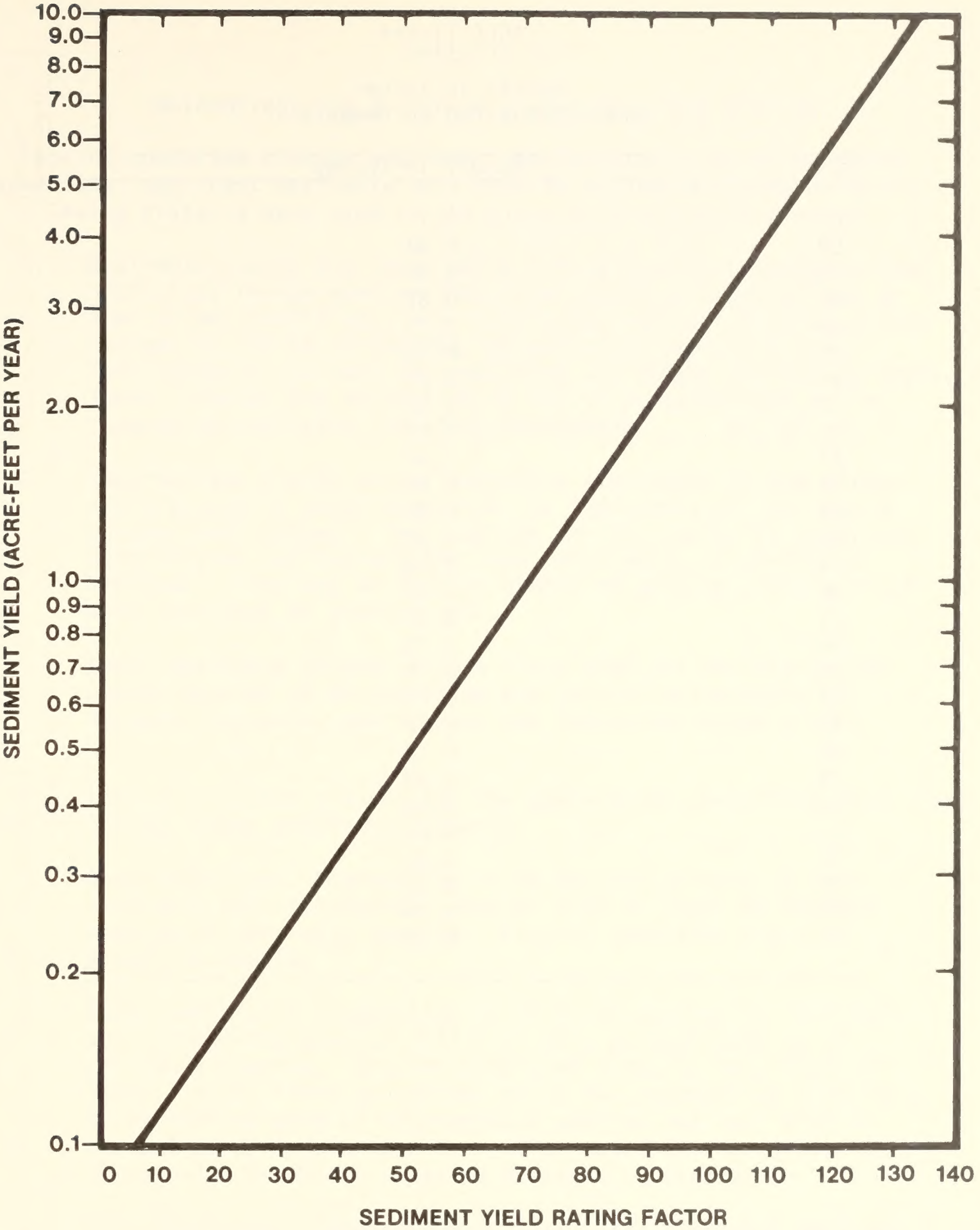


REFERENCE
Mockus, Victor; Estimating direct runoff amounts from storm rainfall:
Central Technical Unit, October 1955

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ENGINEERING DIVISION – HYDROLOGY BRANCH

STANDARD DWG. NO.
ES- 1001
SHEET 1 OF 2
DATE 6-29-56
REVISED 10-1-64

FIGURE II-5-3



SEDIMENT YIELD ESTIMATES

FIGURE II-5-4

TABLE II-5-4

Runoff in Inches
Graph Converted to Numbers

RCN	Runoff in Inches
100	1.1
99	0.94
98	0.88
97	0.82
96	0.76
95	0.70
94	0.64
93	0.58
92	0.52
91	0.46
90	0.40
89	0.36
88	0.32
87	0.28
86	0.24
85	0.2
84	0.18
83	0.16
82	0.14
81	0.12
80	0.10
79	0.09
78	0.08
77	0.07
76	0.06
75	0.05
74	0.04
73	0.03

APPENDIX II-6

Methodology for Assigning Forage Condition Classes

Erosion condition classes and plant species classified as desirable, intermediate, and least desirable were used to determine forage condition. The following criteria were used in the plant classification process:

1. Desirable plants are those which are palatable, productive, and nutritious forage species, are often dominant under climax or near-climax conditions, are long-lived, and have extensive root systems to aid in protecting the watershed against erosion. This category includes the important key forage species (grasses, forbs, browse, and shrubs) which are to be maintained or increased by intensive livestock management.

2. Intermediate plants are of secondary importance in the climax and are usually associated with, or indicators of, ecological successional stages. They replace the desirables as condition deteriorates and replace the least desirables as condition improves. They may be less palatable to grazing animals or be more resistant to grazing use.

3. Least desirable plants include those that are definitely the poorer species in an ecosystem and consist principally of annuals, invaders, and noxious and low-value forage plants.

The erosion condition classes and the above plant classifications result in the following forage condition criteria:

1. Good Condition: Composition is 40 percent or more of both desirable and intermediate species with at least 20 percent made up of desirable species. Erosion condition class is slight to stable.

2. Fair Condition: Composition is 15 to 39 percent of desirable and itermediate species with 5 or more percent made up of desirable species. Erosion condition class is less than critical. Also, those ecosystems where the composition comprises 60 percent or more of intermediate species and less than 5 percent of desirable species will be rated fair condition when the erosion condition class is moderate to stable.

3. Poor Condition: Composition is less than 15 percent desirable and intermediate species. Erosion condition class is critical to severe. (It should be noted that if the erosion condition class is critical to severe, the site is rated in poor condition regardless of the plant composition.)

These criteria, based on the range and phase 1 watershed surveys, were used to determine forage condition in the Parker Mountain Planning Unit.

Table II-6-1 is an example of how forage condition could have been determined for an allotment in the pinyon-juniper vegetation type. For this example, the allotment would be rated in fair condition since there is 30 percent composition of species in the desirable and intermediate classes and the erosion condition class is less than critical.

TABLE II-6-1

Example of Criteria for Determining Present
Forage Condition Class on an Allotment
in Pinyon-Juniper Vegetation Type

Plant Species	Percent Species Composition
Desirable	
Indian ricegrass	10
Needle-and-thread grass	5
Intermediate	
Squirreltail	10
Sandberg bluegrass	5
Least Desirable	
Pinyon-juniper	60
Snakeweed	5
Buckwheat	5
	100
Condition Class (Moderate Erosion)	

APPENDIX II-7

Method Used for Determining Acres of Riparian Vegetation and Condition for Fremont River Gorge, Pine Creek, Riley Creek, and the Upper Fremont River

The riparian zone is that habitat adjacent to a stream channel which contains vegetation.

Transect starting points were predetermined by finding a landmark on a map or aerial photograph near streamside. From the landmark, the worker paced off 100 feet downstream to the first sample station location. There the width of riparian zone vegetation on right and left banks was measured by pacing at right angles to the stream. From the location of the first sample station, the worker moved another 100 feet downstream to the next location, until ten sample stations were surveyed. The next transect was located in the same way, and ten sample stations were inventoried at 100-foot intervals. Each transect was 1,000 feet in length, and as many transects were taken as the length of the creek would allow.

The width of riparian zone vegetation for right and left banks was averaged, then added together to get average total width. The length of the stream on BLM-controlled public lands was multiplied by the average width of riparian zone vegetation and divided by the area of an acre.

Example (Pine Creek):

Average width of riparin zone vegetation

Left Bank	Right Bank
23.892 feet	20.031 feet

Total = 43.923 feet

Length of stream X Total average width = Area of Riparian Vegetation

2 mi. (2 X 5,280 X 43.923 ft. = 463,826.88 ft^2)

$$\frac{463,826.88 ft^2}{43,560 ft^2} = 10.648 \text{ acres}$$

of riparian vegetation

(10.648 is rounded to 11 acres)

Example (Pine Creek):

Average Width of Riparian Zone Vegetation

Left Bank	Right Bank
23.892 feet	20.031 feet

Total = 43.923 feet

APPENDIX II-7 (concluded)

Length of Stream X Total Average Width = Area of Riparian Vegetation

2 mi. (2 X 5,280 X 43.923 ft. = 463,826.88 ft^2)

$$\frac{463{,}826.88\ \text{ft}^2}{43{,}560\ \text{ft}^2} = \text{10.648 acres of riparian vegetation}$$

(10.648 is rounded to 11 acres)

Condition of riparian zone vegetation was determined by adding average bank stability and ungulate damage ratings.

Rating Criteria

Bank Stability	Ungulate Damage
4 = Bank totally stable	4 = Bank stable; 90-100% impact-free
3 = Bank greater than 50% stable	3 = less than 50% damage; 50-90% impact-free
2 = Bank less than 50% stable	2 = Greater than 50% damage; 50-90% impacted
1 = Bank totally unstable	1 = Excessive; 90-100% damage

Example (Pine Creek):

Average bank stability = 3.1 Average ungulate damage = 2.7

3.1 + 2.7 = 5.8 overall riparian zone condition rating

Average overall riparin zone condition rating for the four streams inventoried = 7.13.

Overall condition rating for Pine Creek is .59 below average and is assigned a riparian zone condition rating of "fair".

APPENDIX II-8

Range Trend Methodology
(BLM Manual 4412.22c)

Range trend studies are used to determine changes in vegetation and soil characteristics as a direct result of environmental factors, primarily climate and grazing.

The BLM uses the stratification-key area-key species concept in range trend studies to obtain a representative sample of range trend. Stratification means dividing an allotment or pasture into small homogeneous areas of similar characteristics.

Key areas are portions of a stratum which, because of location, grazing value, and/or use, serve as indicative samples of conditions within the stratum. Permanent range trend plots (5 feet by 5 feet) are located on key areas within each stratum of an allotment.

Collection of trend data in the Parker Mountain Area was gathered on the permanent plots by three separate but complementary activities: photographs, estimations, and observed apparent trend.

Close-up photographs show the soil surface characteristics and the amount of ground surface (at a given time) covered by vegetation and litter. General view photographs present a broad view of the area.

Measurement or estimations are used to show quantitative changes that may or may not be seen in the photograph.

Apparent trend is based on observations made in the vicintiy of the plot.

The photographs, measurements, or estimations, and the write-up on apparent trend when compared with the same site data in later years furnish evidence of vegetation and soil changes (trend).

APPENDIX II-9

Habitat Rating System[a]

ELK

Winter	Summer
Poor - Lack of preferred grasses browse species. Thermal cover limited or absent. Heavy competition with other grazing animals.	Lack of succulent forage species, and cover and water. Heavy competition with other grazing species. Ecotone absent. Limited or no ecotone.
Fair - Preferred grasses and browse species present but in poor condition. Moderate competition with other grazers. Limited ecotone and thermal cover.	Thermal cover present but not abundant water, forbs, grasses and succulent browse (young aspen, serviceberry, etc.) present in limited amounts. Competition with other grazers moderate. Ecotone limited.
Good - Preferred grasses and browse present, available in good condition with little or no hedging of browse species. Light competition Grazfrom other grazing animals. Eco thermal cover present and well distributed.	Thermal cover, water present and well distributed. Forbs, grasses and succulent browse species present and well distributed. Ecotone prevalent. ing competition light. tone and
Excellent - Preferred food species and cover abundant. Little or no competition from other grazers. Ecotone varied and abundant.	Thermal cover and water abundant and well distributed. Forbs, grasses and succulent browse species abundant and well distributed. Ecotone prevalent and well developed throughout area. Grazing competition slight to not present.

---

[a] This is a general rating system to give the reader a general concept of habitat quality and needs of the five animals in Table 2-22, and is not meant to cover all aspects or details of habitat requirements or needs. For more details consult available data sources as UDWR Region Office files or BLM District libraries or manuals.

DEER

Winter	Summer
Poor - Lack of preferred browse species - existing browse heavily hedged or decadent.	Lack of succulent forage species. cover and water. Heavy competition with other browsing species. Ecotone absent.
Fair - Secondary browse species available and lightly used. Preferred browse hedged or lacking.	Thermal cover present but not abundant. Water, forbs, grasses and succulent browse (young aspen, serviceberry, etc.) present in limited amounts. Competition with other browsers moderate. Ecotone limited.
Good - Preferred browse present - moderately hedged - secondary species abundant.	Thermal cover, water present and well distributed. Forbs, grasses and succulent browse species present and well distributed. Ecotone prevalent. Browsing competition light.
Excellent - Preferred browse abundant with light-moderate hedging - secondary species little used.	Thermal cover and water abundant and well-distributed. Forbs, grasses and succulent browse species abundant and well distributed. Ecotone prevalent and well distributed throughout area. Browsing competition slight to not present.

APPENDIX II-9 (continued)

ANTELOPE

Winter	Summer
Poor - Lack of preferred browse species (Bitterbrush, sagebrush, fourwing saltbush) - existing browse hedged or decadent.	Succulent forage species, water absent or very limited. Shade cover (brushy draws) absent or limited. Heavy competition with other grazing animals. Lack of brush 9-18" tall for fawning grounds.
Fair - Secondary browse species light use available-preferred browse heavily hedged or lacking.	Succulent forage species and water available in limited quantity especially in June-August period. Scattered patches of 9-18" in brush and limited brushy draws. Moderate competition for available food and water with other grazing animals.
Good - Preferred browse present-moderately hedged-secondary species abundant.	Preferred succulent forage and water available and prevalent. Prevalent patches or draws with 9-18" browse for fawning and resting during heat of day. Light competition from other grazing animals.
Excellent - Preferred browse abundant - light-moderate hedging-secondary species little used.	Food, cover and water abundant. Competition from other grazing animals slight to absent.

SAGE GROUSE

Winter	Summer
Poor - Lack of preferred browse species - existing browse hedged or decadent.	Succulent forage species, water absent or very limited. Shade cover (brushy draws) absent or limited. Heavy competition with other grazing animals. Lack of brush 9-18" tall for brooding grounds.
Fair - Secondary browse species light use available-preferred browse heavily hedged or lacking.	Succulent forage species and water available in limited quantity especially in June-August period. Scattered patches of 9-18" in brush and limited brushy draws. Moderate competition for available food and water with other grazing animals.
Good - Preferred browse present-moderately hedged-secondary species abundant.	Preferred succulent forage and water available and prevalent. Prevalent patches or draws with 9-18" browse for brooding and resting during heat of day. Light competition from other grazing animals.
Excellent - Preferred browse abundant - light-moderate hedging-secondary species little used.	Food, cover and water abundant. Competition from other grazing animals slight to absent.

APPENDIX II-9 (concluded)

UTAH PRAIRIE DOG[b]

Early Spring through Summer

Poor - Vegetation too dense or taller than dogs. Poorly drained areas. Lack of early spring forage in close proximity to colonies. Heavy livestock use before and during dog emmergence. Lack of succulent forage during lactation and prior to dormancy. Lack of grazing keeps vegetation from becoming rank. No water and or meadows in close proximity to colonies. Soil sand and thus poor for burrow construction.

Fair - Short vegetation. Available forage. Light direct competition from other grazing animals but enough during other periods to keep vegetation in serial stages. Swales present but 1/4 mile or more from colony. Moderate amounts of sand or loamy sand soil.

Good - Short, succulent vegetation available in close proximity to burrows. Little or no direct livestock competition during heavy prairie dog use period. Swales or meadows in close proximity to colony. Only small amounts of sand or loamy sand soil.

Excellent - Short succulent vegetation abundant and swales in close proximity to colonies. No direct livestock competition. Very little loamy sand or sand soil to prevent burrow construction.

[b] Prairie dogs are usually dormant during winter with few above-ground habitat needs. Most critical period is spring and summer.

APPENDIX II-10

Description of Visual Resource Management Classes and Methodology for Determination of Management Classes

I. Visual Resource Management Classes

The BLM's Visual Resource Management (VRM) system divides public lands administered by the BLM into five Visual Resource Management Classes. The management objectives for each VRM class are described below:

Class I.	This class provides for natural ecological changes only. (There are no Class I areas within the planning unit.)
Class II.	Changes in any of the basic landscape elements should not be evident in the management activity.
Class III.	Changes in the basic elements may be evident in the management activity. However, modifications should remain subordinate to the landscape character.
Class IV.	Changes may subordinate the landscape character, but must reflect what could be natural occurance in the characteristic area.
Class V.	Change is required. The area has been disturbed to a point where rehabilitation is needed to bring it back into character with the surrounding landscape.

II. Methodology for Determination of Management Classes

Three factors--scenic quality, visibility, and visual sensitivity--were rated in a standard VRM numerical matrix to determine the visual resource management class for an area. Definitions of the three factors are:

VRM FACTORS

SCENIC QUALITY

Class A: Areas in which landform, water, and vegetative patterns are of unusual or outstanding visual quality.

Class B: Areas in which features contain variety, but are not outstanding. Areas lack dominating features.

Class C: Areas in which features have little variety and become monotonous.

VISUAL ZONES

Foreground-Middleground (FMg): An area that can be seen from travel routes or use areas for a distance of 3 to 5 miles. Management activities can be seen in detail. The outer boundary of this zone is defined as the point where texture and form of individual plants is no longer apparent in the landscape.

Background: The remaining area that can be seen, within about 15 miles, from travel routes or use areas. Vegetation can be discerned at least as patterns of light and dark.

Seldom Seen: Areas that are beyond the background zone or cannot be seen from travel routes or use areas, or can be seen from low use transportation routes only.

SENSITIVITY LEVELS

High Sensitivity: Public concern for quality of the visual resource is major.

Medium Sensitivity: Public concern for quality of the visual resource is secondary.

Low Sensitivity: Public concern for quality of the visual resource is minor.

Criteria weighted for determining visual sensitivity include existing and proposed land uses, use levels, community attitudes, and agency attitudes.

APPENDIX II-11

BLM Wilderness Review Process

The Federal Land, Policy and Management Act of 1976 (FLPMA) directs the BLM to review all public land roadless areas of 5,000 acres or more under its jurisdiction for wilderness values as defined by Congress in the Wilderness Act of 1964. In section 2 (c) of that Act, Congress states that wilderness is essentially an area of undeveloped federal land in a natural condition, without permanent improvements or human habitation, which has outstanding opportunities for solitude or a primitive and unconfined type of recreation. The area may contain ecological, geological, or other features of scientific, educational, scenic, or historical value.

FLPMA also directs the BLM to manage lands that are being reviewed in a manner that will not impair their suitability for wilderness designation by Congress.

The BLM's statewide wilderness review officially began in December, 1978. The wilderness review program contains the following components:

1. Inventory of Roadless Units:
   Roadless units (areas of 5,000 or more acres of contiguous public land bounded by a road or non-public land) are inventoried for wilderness character.

   a. Initial Inventory Phase: In the initial phase, roadless units determined to "clearly and obviously" lack wilderness character because of lack of naturalness are eliminated from further wilderness review and are no longer subject to interim management protection. This phase is scheduled for completion approximately in August of 1979.

   b. Intensive Inventory Phase: In the intensive phase, all roadless units that are not eliminated in the initial phase are inventoried for all factors defined in section 2-C of the Wilderness Act. Roadless Inventory Units determined to possess wilderness character are identified as Wilderness Study Areas (WSAs). Areas determined not to possess wilderness character are eliminated from further wilderness review and are released from interim management protection. This phase is scheduled for completion approximately in September of 1980.

2. Study and Reporting of Wilderness Study Areas:
   Each Wilderness Study Area is evaluated in the BLM's land use planning system to compare its wilderness values to other resource values in order to determine whether the WSA is more suitable for wilderness or for other uses. By October 8, 1991 all WSAs must be recommended to the President as suitable or non-suitable for wilderness designation by Congress.

APPENDIX III-1

Comparison of Stream Habitat Elements Between A Reach Under Season-Long Grazing and A Reach Without Livestock Grazing

Stream Habitat Element	Condition Grazed	 Ungrazed	Percent Change From Ungrazed[a]
1. Riparian Shrub Volume (cubic meters of aerial volume per square meter of ground surface)	6.67	85.3	-92
2. Overhead Cover (total number of units such as overhanging shrubs, undercut banks, etc., per acre of stream surface)	2,289	4,037	-43
3. Channel Habitat (percent of channel area with riffles	78	54	+44
or pools and runs)	21	46	-54
4. Average Depth (feet)	1.06	1.34	-21
5. Average Channel Width (feet)	141	74	+91
6. Average Water Width (feet)	103	66	+56
7. Streambank Vegetation			
Before flood	1,593	3,000	-47
After flood	1,305	3,366	-61
(feet of streambank covered with vegetation per mile of stream)			
8. Streambank Erosion (feet of streambank eroding per 100 feet of streambank)	19	1.3	+1,362
9. Channel Movement (percent of channel length that changed position in the streambottom)	77	18	+ 328
10. Standing Crop of Fish			
Brown Trout	63	213	-70
Other Fish	52	122	-57
(pounds of fish per acre of stream surface)			

Source: Adapted from Marcuson (1970 and 1971 and Gunderson (1968).

[a] Grazed divided by ungrazed minus 1 times 100 equals Percent Change.

APPENDIX III-2
DETERMINATION OF VISUAL IMPACT

The degree to which a range development adversely affects the visual quality of the landscape depends upon the amount of visual contrast that is created between the development and the existing landscape character. This contrast can be measured by separating the landscape into its major features (land surface, vegetation and structures) and then predicting the magnitude of change that would occur in the four basic elements of each feature (form, line, color, and texture).

As summarized in Table III-2-1, each range development has been analyzed to predict what contrast it would cause if added to the existing landscape (subject to Chapter 1 mitigation). The contrast ratings (numerical scores) are compared with the numerical limit of the management objective for the VRM class involved. A contrast rating greater than the limits of the VRM class indicates an adverse visual impact.

TABLE III-2-1

Anticipated Visual Contrast of Proposed Range Development to Landscape Feature[a]

				Landscape Feature														
				Land Surface					Vegetation					Structure				
Planning Component	Allotments	Proposed Range Developments	VRM Class	Form	Line	Color	Texture	Total[b]	Form	Line	Color	Texture	Total[b]	Form	Line	Color	Texture	Total[b]
NO LIVESTOCK GRAZING	None affected.	None																
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)	Cedar Peak	Earthern res. (modify)	IV	4	0	0	0	4	0	0	2	0	2	0	0	0	0	0
	Hare Lake	Pipeline (buried)	IV	0	3	2	1	6	0	3	2	1	6	0	0	0	0	0
		Earthen res. (modify)	IV	4	0	0	0	4	0	0	2	0	2	0	0	0	0	0
		Water troughs	IV	0	0	0	0	0	0	0	0	0	0	4	0	2	0	6
	Smooth Knoll	Earthen res. (construct)	IV	8	0	2	2	12	4	0	2	3	9	0	0	0	0	0
		Earthen res. (modify)	IV	4	0	0	0	4	0	0	2	0	2	0	0	0	0	0
	Flat Top	Pipeline (buried)	IV	0	3	2	1	6	0	3	2	1	6	0	0	0	0	0
		Water trough	IV	0	0	0	0	0	0	0	0	0	0	4	0	2	0	6
		Earthen res. (modify)	IV	4	0	0	0	4	0	0	2	0	2	0	0	0	0	0
	Cedar Grove	Earthen res. (construct)	III	8	0	2	2	12	4	0	2	3	9	0	0	0	0	0
		Earthen res. (modify)	III	4	0	0	0	0	0	0	2	0	2	0	0	0	0	0
	Co-op	Pipeline (buried)	IV	0	6	2	1	9	0	6	2	1	9	0	0	0	0	0
		Earthen res. (modify)	IV	4	0	0	0	4	0	0	2	0	2	0	0	0	0	0
	Cyclone	Earthen res. (modify)	IV	4	0	0	0	4	0	0	2	0	2	0	0	0	0	0
	Post Hollow	Earthen res. (modify)	III	4	0	0	0	4	0	0	2	0	2	0	0	0	0	0
IMPLEMENT TWO-PASTURE REST-SEASONAL GRAZING AND CONSOLIDATION OF ALLOTMENTS (Spring)	Seven Mile	Fence	III,IV	0	0	0	0	0	0	0	0	0	0	4	3	2	0	9
		Earthen res. (construct)	IV	8	0	2	2	12	4	0	2	3	9	0	0	0	0	0
		Earthen res. (modify)	IV	4	0	0	0	0	0	0	2	0	2	0	0	0	0	0
		Pipeline (buried)	IV	0	6	2	1	9	0	6	2	1	9	0	0	0	0	0
		Chaining and seeding	IV	0	0	0	2	2	12	0	4	4	20	0	0	0	0	0
		Cattleguard	III	0	0	0	0	0	0	0	0	0	0	4	0	2	1	7
		Water trough	IV	0	0	0	0	0	0	0	0	0	0	4	0	2	1	7

TABLE III-2-1 (concluded)

				Landscape Feature														
				Land Surface					Vegetation					Structure				
Planning Component	Allotments	Proposed Range Developments	VRM Class	Form	Line	Color	Texture	Total[b]	Form	Line	Color	Texture	Total[b]	Form	Line	Color	Texture	Total[b]
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter)	Deleeuw	Earthen res. (construct)	III	8	0	2	2	12	4	0	2	3	9	0	0	0	0	0
	Long Hollow	Earthen res. (modify)	IV	4	0	0	0	0	0	0	2	0	2	0	0	0	0	0
		Fence	III,IV	0	0	0	0	0	0	0	0	0	0	4	3	2	0	9
	Terza Flat	Earthen res. (modify)	IV	4	0	0	0	0	0	0	2	0	2	0	0	0	0	0
		Fence	IV	0	0	0	0	0	0	0	0	0	0	4	3	2	0	9
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Winter)	Grover	Exclosure[c]	III,IV	0	0	0	0	0	4	0	0	1	5	8	3	2	0	13
	Donkey Hill	Exclosure[c]	II,III	0	0	0	0	0	4	0	0	1	5	8	3	2	0	13
	Government Creek	Exclosure[c]	III,IV	0	0	0	0	0	4	0	0	1	5	8	3	2	0	13
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter)	None affected.	None.																

Source: Modified from BLM VRM Manual.

Notes: [a] All contrast ratings were made from nearest access roads.

[b] The maximum score possible is 30. A total score of 1 through 10 for each feature indicates the contrast can be seen, but does not attract attention; 11 through 20 attracts attention and the contrast begins to dominate the characteristic landscape; 21 through 30 demands attention and will not be overlooked.

The degree of contrast allowed per feature to meet VRM Class Objectives is as follows: Class I ≤ 10; Class II ≤ 10; Class III ≤ 16; Class IV ≤ 20; and Class V ≤ 20

[c] Because the exact location of the proposed enclosures is not known, anticipated contrast was analyzed in a location where the structures would be most obvious. If the enclosures meet objectives for the VRM class in the most obvious location, it is assumed that all other locations would be within acceptable limits.

APPENDIX III-3

A. Input-Output Analysis

To trace the direct effects of the proposal on range livestock operations to the impacts on the local economy (i.e., Wayne County), an input-output analysis was employed. In its most basic form, an I-O model consists of three components: a transaction-of-flow table; a set of direct coefficients; and a set of direct and indirect coefficients. Each of these will be explained briefly with special reference to the way it relates to the impacts being studied herein.

Consider a very oversimplified three-sector model including (1) range livestock (2) manufacturing, and (3) services. (The actual model used in this study has 18 sectors, of which range livestock represents the focus.) The flow table (shown on Table III-3-1) identifies the flows for each sector to every sector (Xij, the interindustry flow), from each sector to those who consume the final output (i.e., Fi, the final demands), and the flow of primary inputs including labor and capital to each sector and to final demand (Pj).

Reading down any row in the table indicates the amount purchase by any sector (or by final demand) from any other sector (or from primary inputs). For example, the amount purchased by range livestock from manufacturing is X_{12}. Reading across the table indicates sales made from any sector (in primary inputs) to any other sector (in final demand). For example, the amount purchased by range livestock from services would be X13.

Finally, total inputs (the column totals) and take outputs (the row totals) are shown in the margins. For the primary sector, the amount purchased must equal the amount sold.

The direct coefficients matrix indicates the input requirements from sector 1 per dollar of output of sector j. These coefficients (aij) are relevant only for the purchasing sector, and are found by dividing each flow by the relevant column take, i.e., $aij = \frac{xij}{xj}$ for all i and j. The direct coefficient for primary inputs (pij) are found in the same way, i.e., $pj = \frac{pj}{xj}$ j = 1,2,3, These coefficients are outlined in Table III-3-2.

Again consider sector 1, the range livestock industry. For each dollar of livestock output a_{11} dollars of input is required from the range livestock industry, a_{21} dollars from manufacturing, and a_{31} from services. In addition, p1 dollars of primary inputs are required.

From these data the direct effect on output of a sector caused by a change in final demand (ΔF) for output from that sector can be determined as: $\Delta WDXj = (aij)\ (\Delta Fj)$.

But this analysis is incomplete because it fails to include a series of indirect effects. For example, if final demand for range livestock (F_1) changes, there would be direct effect changing the output of that sector. But note that this sector buys output from all sectors, so when range livestock output changes, it would cause a change in the outputs of all other sectors.

In fact, a change in the final demand for output of one sector would lead to multiple changes in demand for all sectors. The single most advantageous feature of the input-output technique is its ability to simultaneously determine the total effect (both direct and indirect) on all sectors. The approach is outlined as follows:

Define the final demands as a column vector F= (F1, F2, F3), ouput as a column vector X = (X1, X2, X3), and the direct coefficient matrix as A = (aij), i, j = 1,2,3. Now total output X will equal the amount necessary to meet both intermediate demands (AX) and final demands (F) is: $X = AX + F$. Solving this system for X yields: $X = (I-A)^{-1} F$.

The $(I-A)^{-1}$ matrix is a set of α_{ij} which indicate the total (direct and indirect) change in the ouput of sector i (ΔX_i) caused by a change in final demand in sector j (ΔF_j) i.e., $\Delta X_i = aij\ \Delta F_j$.

The change in total output for the region is given by the sum of changes in all three sectors, i.e., $\alpha Xr = (\alpha ij + \alpha 2j + \alpha 3j)\ \Delta F_j$ or

$$\Delta X_r = \overset{3}{2} = \alpha\ ij\ \Delta F_j$$

The I-O model can be used to determine a variety of other inputs of which the most important are those on earnings and employment. The earnings inpacts (ΔY_i) can be determined for any sector by multiplying the earnings (or income, coefficient) (pj) by the change in output, i.e.,

$$\Delta Y_i = pj\ \Delta X_j.$$

Total earnings change in the region in given by the sum of the earnings changes for all sectors:

$$\Delta Y = P_1\ \Delta X_1 + P_2\ \Delta X_2 + P_3\ \Delta X_3$$

or

$$\Delta Y = \sum_{i=1.}^{3} Pj\ \Delta X_i$$

By assuming a constant rate of employment (Ei) to output ($e = E/X$), take employment change (ΔE) associated with any output change can be determined by $\Delta E = e\ \Delta X$.

In the analysis of the impacts of the BLM proposal, two applications of I-O analysis are used. In the "feed change" scenario, increased efficiency in the range livestock sector would result in changes in the direct coefficients (i.e., the aij's) associated with that sector. (To maintain consistency, control adjustments are made in the final demand vector.) The result would be no change in output, but increased net income for farm operators and workers.

In the "herd change" scenario, there would be no change in technology, that is the A matrix is not modified, but final demand for the range livestock sector would be increased, resulting in increased output and earnings.

TABLE III-3-1

The Basic Input-Output Flow Table

Producing Sector	Consuming Sector				
	(1)	(2)	(3)	Final Demand	Total Output
Livestock Grazing (1)	X11	X12	X13	F1	X1
Manufacturing (2)	X21	X22	X23	F2	X2
Services (3)	X31	X32	X33	F3	X3
Primary Input	P1	P2	P3		

TABLE III-3-2

The Direct Coefficients Matrix

	Sector		
	(1)	(2)	(3)
Livestock Grazing (1)	F11	a12	a13
Manufacturing (2)	a21	a22	a23
Services (3)	a31	a32	a33
Primary Inputs	p1	p2	p3

B. Impact of the Proposal on Per Animal Unit Farm Cash Recipts, Expenses, and Net Income

To determine the impact of the proposal on the financial operations of area ranchers, detailed farm budget data were obtained from nine livestock operators in Wayne County, three each in small, medium, and large-size classes. Summary data from these budgets for each operating scale are presented in Table 2-26.

The effects of the proposal on ranch receipts, expenses, and income are estimated in the following way:

1. The increase in actual AUMs use after implementation of the proposal is estimated at 2,895 (i.e. from 8,285 before the action to 11,180 afterward).

2. The increased animal and wool production is determined from the change in AUMs, making appropriate adjustments for differing animal types (i.e., cattle, sheep, etc) and grazing season. These changes are then evaluated using partial budgeting techniques and are based on the following assumptions:

a. Increased production is valued as follows:

Cull ewes -- $15.00 per head;
Lambs -- 62.00 per head;
Heifer calves- 0.70 per pound (400 lb. average weight);
Bull calves -- 0.75 per pound (450 lb. average weight);
Wool -- 0.74 per pound (10 lbs. per mature animal).

b. Assumptions concerning relevant operating expenses include:

Hay -- $70.00 per ton (delivered);
Feeding costs -- $4.00 per ton of hay;
Grazing fees -- $1.50 per AUM;
Non fee costs of grazing -- $5.00 per AUM.

The effects of the proposed "feed change" scenario on the income statement of livestock operators of different size are outlined in Table III-3-3. These data are reported in terms of dollars per animal unit (AU). The effect of the action on all livestock operators would be to reduce cash expenses per AU with no effect on cash receipts. The reduction in cash expenses would be greatest for medium size operators (a decrease of $7.41 per AU or 3.8 percent). The effect on net income would be more significant--an increase of $7.41 per AU representing an increase of 17.0 percent.

For both the small and large operators the effect of the proposal on net income per AU would be relatively modest, although in both cases it would be significantly above that for the medium size operator. In the case of the small operator, the proposal is projected to increase net income per AU from $70.35 to $73.89, an increase of 5.0 percent. For large operators, net income per AU is projected to increase from $56.43 to $59.81, an increase of 6.0 percent.

APPENDIX III-3 (continued)

TABLE III-3-3

Farm Receipts, Expenses, and Net Returns per Animal Unit
Before and After "Feed Changes"
(by Class of Livestock Operations)

	Before Proposed Action	After Proposed Action	Net Change	
			Dollars	Percent
Small Operators:				
Cash Receipts	$308.75	$308.75	0	0
Cash Expenses	200.35	196.81	$3.54	-1.8
Net Income	$ 70.35	$ 73.89	+3.54	+5
Medium Operators:				
Cash Receipts	$353.28	$353.12	0	0
Cash Expenses	193.59	186.18	-7.41	-3.8
Net Income	$ 43.51	$ 50.92	+7.41	+17.0
Large Operators:				
Cash Receipts	$252.01	$252.01	0	0
Cash Expenses	152.12	148.74	-3.38	-2.2
Net Income	$ 56.43	$ 59.81	+3.38	+6.0

The effects of the "herd change" scenario on the ranch income statement in terms of dollars per AU are outlined in Table III-3-4. It is estimated that there would be no effects on small operators. The impacts on medium-size operations would be quite significant. Cash receipts per AU are estimated to increase 6.9 percent to $377.68; expenses per AU would increase by 3.3 percent to $199.99; and net income per AU is projected to increase 41.4 percent to $61.52. The impact on net income must be regarded as highly significant. The effects on large operators would be similar although more modest. Both per AU revenues and cash expenses would increase (by 5.6 percent and 2.9 percent, respectively), and net income per AU would increase from $56.43 to $66.31 (17.5 percent).

APPENDIX III-3 (continued)

TABLE III-3-4

Farm Receipts, Expenses, and Net Returns Per Animal Unit
Before and After "Herd Change"
(By Class of Livestock Operation)

	Before Proposed Action	After Proposed Action	Net Change	
			Dollars	Percent
Small Operators:				
Cash Receipts	$308.75	$308.75	0	0
Cash Expenses	200.12	200.12	0	0
Net Income	$ 70.35	$ 70.35	0	0
Medium Operators:				
Cash Receipts	$353.28	$377.68	+24.43	+6.9
Cash Expenses	193.57	199.99	+ 6.42	+3.3
Net Income	$ 43.51	$ 61.52	+18.01	+41.4
Large Operators:				
Cash Receipts	$252.01	$266.32	+14.31	+5.6
Cash Expenses	152.12	156.55	+ 4.43	+2.9
Net Income	$ 56.43	$ 66.31	+ 9.88	17.5

C. Local Economic Impacts of Proposal

The "feed change" scenario would affect only the level of earnings, not output levels. The structure of the input-output model is changed to reflect greater efficiency in the "range livestock" sector. Define total regional output as X_r, earnings as Y_r, and the earnings-output multiplier as Y (where $Y = Y_r/X_r$). Because of greater efficiency in "range livestock" operations, earnings would increase in the amount: $(Y^*-Y)\ X_r$

The level of earnings is given by: $Y_r = YX_r$

$\$717,324 = (0.342)\ 2,097,440$

After the proposed action is fully implemented, the multiplier would increase to 0.356, and the level of earnings would be $Y^*_r = Y^*Xr$

$\$746,689 = (0.356)\ 2,097,440$

So earnings would increase by $29,305. Equivalently, this change (i.e., ΔY_r) could be determined as $\Delta Y_r = (Y^* - Y)\ X_{12}$ or

$\$29,365 = (0.356 - 0.342)\ 2,097,440$

Of the total change in earnings, part would be directly received by the "range livestock" sector and part would accrue to other sectors in the local economy. The part accruing to "range livestock" (ΔY_i) is given by

$\Delta Y_i = Y\alpha X$ where α is the appropriate element from the $(I-A)^{-1}$ matrix. Making appropriate substitutions yields the change in income to the "range livestock" sector

$\Delta Y = (0.356)(1.053)(29,365)$

The earnings change in other sectors (ΔY_2) is given by

$\Delta Y_2 = \Delta Y_2 - \Delta Y_1$

or

$\$29,365 - \$11,012 = \$18,353$

The income multiplier (ky) defined as:

$$\left[\frac{\text{Direct and indirect income change}}{\text{Direct Income Change}}\right] -1$$

After implementation of the proposed action, the AU multiplier would increase from 1.769 to 1.806, i.e.,

$$1.860 = \left[\frac{11,012 + 18,353}{11,012}\right] -1$$

The impacts associated with the "herd change" scenario are broader because both output and earnings in the livestock sector would change. Final output from range livestock would increase by $75,799 which would result in a total output change of 2.338 X 75.999 or $177,171.

Total county earnings would increase by $60,592, determined as the product of the output change and earnings-output ratio (i.e., $171,171 X $.345 = $60,592). Of that total earnings change, $21,820 would accrue to the range livestock sector and the remainder, $38,771 would received indirectly by other sectors in the region.

The proposed action is expected to increase area employment by 22, of which 9 would be in the range livestock sector and 13 in other industries. Assuming the constant population per job ratio of 2.8226, county population is projected to increase by 62.

D. Impact of Proposal on Wealth Position of Livestock Operators

Many authors have shown that grazing permits have been transferred (bought and sold) by livestock operators since the early 1930s (see attached references). In addition, the forage report to the Public Land Law Review Commission found that Forest Service and BLM permits have been purchased by persons other than the original owners. Furthermore, lending agencies have historically used these permit values as collateral for loans. The reason for these values is due to the difference between the value of the forage and the costs (fee and non-fee) of obtaining federal forage. This difference is capitalized into the value of the permit and/or dependent private land. When the tenure of these permits becomes short or non-existent, then permit values approach zero. Therefore, those operators who hold permits which were purchased by another livestock operator(s) lose this asset.

Ranchers using the Parker Mountain Planning Unit are presently not using 4,712 AUMs (36 percent) of the 12,997 AUMs currently allocated to livestock grazing. The proposal should encourage Parker Mountain livestock operators to use their full potential level of use. If they do not, they will probably also lose the value of these permits. It is a policy of the BLM that a rancher may lose AUMs that he does not use.

As the value of these (permits) decreases, the value of the dependent private property, assessed valuations, and local property taxes would also decrease. The magnitude of this change is not known due to existing data restrictions.

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APPENDIX VIII-1

Existing Vegetation Use and Alternate Allocation With Continuation of Present Management and Level of Use

Basic Information					Existing Forage Use and Allocation													Proposed Forage Use and Allocation									
								Number and Kind of Animal					Current Use						Estimated Initial and Long-Term Grazing								
													Livestock[b]		Estimated Wildlife Use (AUMs)[c]				Livestock		Wildlife						
Proposed Action Components and Allotments	Land Status				Forage Production (AUMs)	Current Allocation (AUMs)		Livestock[a]		Wildlife											AUMs				Percent of Current Use	AUMs Allocated to Other Uses[d]	Over-allocated (AUMs)[e]
	Public	State	Private	Season of Use		Livestock	Wildlife	Cattle	Sheep	Antelope	Deer	Elk	AUMs	% of Allocation	Antelope	Deer	Elk	Season	AUMs	% of Current Allocation	Antelope	Deer	Elk	Total			
NO LIVESTOCK GRAZING																											
Dez Hickman	155	0	0	--	6	0	0[f]	0	0	0	6	0	0	--	0	5	0	--	0	100	0	5	0	5	100	1	0
Tanner	400	0	0	--	20	0	0	0	0	0	13	0	0	--	0	9	0	--	0	100	0	9	0	9	100	11	0
Wildlife	320	0	0	--	4	0	0[f]	0	0	0	3	0	0	--	0	4	0	--	0	100	0	4	0	4	100	0	0
Subtotal	875	0	0	--	30	0	0	0	0	0	22	0	0	--	0	18	0	--	0	100	0	18	0	18	100	12	0
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)																											
Bicknell	1,819	0	0	11/1-3/31	149	150	0	19	0	0	13	0	75	50	0	11	0	11/1-3/31	150	100	0	11	0	11	100	0	12
Bicknell Spring[g]	n/a[h]	n/a	n/a	5/16-6/30	1,029	1,029	n/a	1,019	0	n/a	n/a	n/a	878	85	n/a	n/a	n/a	5/16-6/30	1,029	100	n/a	n/a	n/a	n/a	n/a	0	0
Cedar Peak[g]	12,351	589	0	5/16-6/30 9/11-10/25	1,046	655	391	0	1,289	27	27	7	506	77	20	39	11	5/16-6/30 9/11-10/25	655	100	20	39	11	70	100	321	0
Hare Lake[g]	11,453	1,229	639	5/16-6/30 9/16-10/25	870	545	325	0	1,908	37	14	0	481	88	20	39	0	5/16-6/30 9/16-10/25	545	100	20	39	0	59	100	266	0
Smooth Knoll[g]	18,761	920	0	5/16-6/30 9/16-10/31	1,682	1,053	629	0	1,510	150	14	0	590	56	67	32	0	5/16-6/30 9/16-10/31	1,053	100	67	32	0	99	100	530	0
Bicknell Winter[g]	n/a	n/a	n/a	4/16-5/15 9/1-3/31	1,306	1,306	n/a	843	0	n/a	n/a	n/a	776	59	n/a	n/a	n/a	4/16-5/15 9/1-3/31	1,306	100	n/a	n/a	n/a	n/a	n/a	0	0
Flat Top[g]	19,256	2,790	0	5/16-6/30 11/1-1/31	1,265	739	526	0	1,150	124	61	0	418	57	53	79	0	5/16-6/30 11/1-1/31	739	100	53	79	0	132	100	394	0
King Sheep[g]	9,341	0	0	11/1-2/28	275	161	114	0	145	49	82	0	53	33	20	74	0	11/1-2/28	161	100	20	74	0	94	100	20	0
Brian	640	0	0	12/1-3/31	33	33	0	27	50	0	13	0	13	0	0	9	0	12/1-3/31	33	100	0	9	0	9	100	0	9
Busenbark	356	0	0	12/1-12/31	30	30	0	0	150	0	7	0	20	67	0	6	0	12/1-12/31	30	100	0	6	0	6	100	0	6
Cedar Grove	11,755	1,280	0	5/11-6/30 10/1-1/15	1,320	1,134	0[f]	308	1,980	27	8	120	418	37	18	10	158	5/11-6/30 10/1-1/15	1,134	100	18	10	158	186	100	0	0
Cyclone Co-op[g]	n/a	n/a	n/a	5/1-5/31	622	622	n/a[h]	618	0	n/a	n/a	n/a	524	84	n/a	n/a	n/a	5/1-5/31	622	100	n/a	n/a	n/a	n/a	n/a	0	0
Co-op[g]	7,160	120	0	5/16-6/30	508	229	279	0	929	80	14	6	182	79	65	24	9	5/16-6/30	229	100	65	24	9	98	100	181	0
Cyclone[g]	17,603	1,957	0	5/16-6/30 10/1-11/15	1,203	542	661	0	895	165	27	7	527	97	100	32	11	5/16-6/30 10/1-11/15	542	100	100	32	11	143	n/a	518	0
Donkey Hill	1,367	0	0	10/16-3/15	25	25	0	10	0	0	20	0	25	100	0	17	0	10/16-3/15	25	100	0	17	0	17	100	0	17
Fishlake	2,880	1,200	0	6/1-6/25 10/21-11/10	236	162	0[f]	0	1,800	8	15	40	162	100	7	14	53	6/1-6/25 10/21-11/10	162	100	7	14	53	74	100	0	0
Government Creek	1,842	0	0	12/1-2/28	91	91	0	0	147	0	54	0	87	96	0	47	0	12/1-2/28	91	100	0	47	0	47	100	0	47
Grover	1,582	0	0	11/1-5/31	178	120	58	17	0	0	28	0	17	14	0	24	0	8/16-4/15	120	100	0	24	0	24	100	34	0

Hector Hollow	2,002	0	0	3/11-4/30 5/11-6/10 12/1-1/31	199	138	0	109	100	0	20	0	56	41	0	14	0	3/11-6/10 12/1-1/31	138	100	0	14	0	14	100	47	0
Hickman	272	0	0	6/1-7/31	12	4	0[f]	2	0	0	9	0	4	100	0	8	0	6/1-7/31	4	100	0	8	0	8	100	0	0
Horse Pasture	640	0	0	8/16-4/15	14	14	0	2	0	0	20	0	8	57	0	17	0	8/16-4/15	14	100	0	17	0	17	100	0	17
Lime Kiln	2,960	0	320	11/1-2/28	332	354	0	7	484	0	20	0	229	65	0	14	0	11/1-2/28	354	100	0	14	0	14	100	0	36
Loa Winter	n/a	n/a	n/a	10/16-3/31	142	254	172	96	0	n/a	n/a	0	133	52	n/a	n/a	n/a	10/16-3/31	254	100	n/a	n/a	n/a	n/a	n/a	0	112
Deleeuw	3,238	625	0	5/21-5/31 7/1-1/30	181	168	n/a	0	350	48	82	0	118	70	25	56	0	5/21-5/31 7/11-1/30	168	100	25	56	0	81	100	0	68
Long Hollow	8,064	640	0	1/16-3/20	393	332	n/a	0	1,200	77	68	0	245	74	40	65	0	1/16-3/20	332	100	40	65	0	105	100	0	44
Terza Flat	7,278	1,312	0	2/1-3/15	334	321	n/a	0	1,150	124	20	0	234	73	65	41	0	2/1-3/15	321	100	65	41	0	106	100	0	93
Lyman	2,037	0	0	12/1-3/15	157	125	0	37	0	0	20	0	89	71	0	14	0	12/1-3/15	125	100	0	14	0	14	100	18	0
Miner's Mountain	15,683	2,000	0	10/16-5/31	320	211	0	160	0	0	137	0	144	68	0	118	0	10/16-5/31	211	100	0	118	0	118	100	0	9
Neff Ranch	1,646	0	1,174	1/6-2/25	180	105	0	0	300	0	20	0	105	100	0	14	0	1/6-2/25	105	100	0	14	0	14	100	61	0
North Fremont	3,351	642	0	11/1-4/30	235	323	0	0	450	44	54	0	216	67	19	47	0	11/1-4/30	323	100	19	47	0	66	100	0	154
Post Hollow	11,715	1,911	0	10/15-3/31	631	499	132	20	1,345	140	48	0	293	59	90	42	0	10/15-3/31	499	100	90	42	0	132	100	0	0
Rees	1,080	0	0	3/1-4/30	32	32	0	16	0	0	20	0	0	0	0	14	0	3/1-4/30	32	100	0	14	0	14	100	0	14
River	2,029	0	160	10/16-4/15	75	75	0	13	0	0	28	0	60	80	0	24	0	10/16-4/15	75	100	0	24	0	24	100	0	24
Sand Wash	778	0	0	2/1-2/25	40	54	0	0	350	0	13	0	0	0	0	9	0	2/1-2/25	54	100	0	9	0	9	100	0	23
Seven Mile[g]	18,639	1,274	0	5/6-6/15	557	733	0	723	0	44	109	40	436	56	8	66	53	5/6-6/15	733	100	8	66	53	127	100	0	303
Spring Branch	492	80	0	11/1-4/15	52	11	41	2	0	0	9	0	6	55	0	8	0	11/1-4/15	11	100	0	8	0	8	100	33	0
Taylor Farm	400	0	0	12/1-1/31	18	18	0	0	100	0	9	0	7	0	0	6	0	12/1-1/31	18	100	0	6	0	6	100	0	6
Teasdale Bench	1,200	0	0	1/1-1/31	20	20	0	0	100	0	20	0	20	100	0	17	0	1/1-1/31	20	100	0	17	0	17	100	0	17
Teasdale Ranch	1,035	0	0	10/16-4/15	80	80	0	20	0	0	13	0	71	89	0	11	0	10/16-4/15	80	100	0	11	0	11	100	0	11
Torrey Town	9,477	66	160	10/16-5/31	37	500	0	112	0	0	54	0	59	12	0	47	0	10/16-5/31	500	100	0	47	0	47	100	0	510
Subtotal	212,182	18,635	2,453	--	15,909	12,997	3,328	4,180	17,882	1,144	1,190	220	8,285	64	617	1,109	295	--	12,997	100	617	1,109	295	2,021	100	2,423	1,532
GRAND TOTAL	213,057	18,635	2,453	--	15,939	12,997	3,328	4,180	17,882	1,144[i]	1,212[i]	220[i]	8,285	64	617	1,127	295	--	12,997	--	617	1,127	295	2,039	100	2,435[d]	1,532

[a] Number may vary from year to year. Livestock grazing allocation (AUMs) remains constant.

[b] Based on the average authorized active (licensed) use for the 3 years 1975-77.

[c] Use converted from Utah Division of Wildlife Resources information. Due to lack of other information, these are considered competitive AUMs.

[d] The are 2,435 AUMs would be allocated to watershed, aesthetics, and threatened or endangered species.

[e] The AUMs allocated that exceed the forage production.

[f] Though no reservations were made, it is assumed, based on current forage condition and trend, that forage is available for the AUMs of wildlife use listed in estimated initial wildlife use column.

[g] Allotments currently being managed under allotment management plans (AMP).

[h] n/a = not applicable, as information for these allotments is included in the sub-allotments listed thereunder, or allotment listed above.

[i] Includes both summer and winter animals--antelope 394 summer, 750 winter; deer 109 summer, 1,103 winter; elk 20 summer, 200 winter.

APPENDIX VIII-2

Existing Vegetation Use and Alternate Allocation for Maximum Constraints on Livestock Grazing

Basic Information				Existing Vegetation Use and Allocation															Alternate Allocation									
	Land Status					Current Allocation (AUMs)		Number and Kind of Animal					Current Use							Livestock		Wildlife						
								Livestock[a]		Wildlife			Livestock[b]		Estimated Wildlife Use (AUMs)[c]								AUMs					
Alternate Action Components and Allotments	Public	State	Private	Season of Use	Vegetation Production (AUMs)	Livestock	Wildlife	Cattle	Sheep	Antelope	Deer	Elk	AUMs	% of Allocation	Antelope	Deer	Elk	Total	Season of Use	AUMs	% of Current Allocation	Use	Antelope	Deer	Elk	Total	Percent of Current Use	Other Uses AUMs[d]
NO LIVESTOCK GRAZING																												
Brian[e]	640	0	0	12/1-3/31	33	33	0	27	50	0	13	0	13	39	0	9	0	9	--	0	--	--	0	33	0	33	366	0
Deleeuw[f]	3,238	625	0	5/21-5/31 7/1-1/30	205	168	30	0	350	48	82	0	118	70	25	56	0	81	--	0	--	--	25	180	0	205	253	0
Dez Hickman	155	0	0	--	6	0	0	0	0	0	6	0	0	--	0	5	0	5	--	0	--	--	0	6	0	6	120	0
Donkey Hill	1,367	0	0	10/16-3/15	25	25	0	10	0	0	20	0	25	100	0	17	0	17	--	0	--	--	0	25	0	25	147	0
Government Creek	1,842	0	0	12/1-2/28	91	91	0	0	147	0	54	0	87	96	0	47	0	47	--	0	--	--	0	91	0	91	194	0
Hickman	272	0	0	6/1-7/31	12	4	0	2	0	0	9	0	4	100	0	8	0	8	--	0	--	--	0	12	0	12	150	0
Horse Pasture	640	0	0	8/16-4/15	14	14	0	2	0	0	20	0	8	57	0	17	0	17	--	0	--	--	0	14	0	14	82	0
Miner's Mountain	15,683	2,000	0	10/16-5/31	320	211	0	160	0	0	137	0	144	68	0	118	0	118	--	0	--	--	0	320	0	320	271	0
Rees[e]	1,080	0	0	3/1-4/30	32	32	0	16	0	0	20	0	0	--	0	14	0	14	--	0	--	--	0	32	0	32	228	0
Riparian[h]	600	0	0	11/1-1/31	37[h]	37[h]	7[h]	51[h]	9[h]	0[h]	5[h]	0	5[h]	135[h]	0	4[h]	0	4[h]	--	0	--	--	0	17[h]	0	17[h]	425	20
River	2,029	0	160	10/16-4/15	75	75	0	13	0	0	28	0	60	80	0	24	0	24	--	0	--	--	0	75	0	75	313	0
Tanner[e]	400	0	0	--	20	0	0	0	0	0	13	0	0	--	0	9	0	9	--	0	--	--	0	20	0	20	222	0
Taylor Farm[e]	400	0	0	12/1-1/31	18	18	0	0	100	0	9	0	7	39	0	6	0	6	--	0	--	--	0	18	0	18	300	0
Teasdale Bench	1,200	0	0	1/1-1/31	20	20	0	0	100	0	20	0	20	100	0	17	0	17	--	0	--	--	0	20	0	20	118	0
Torrey Town	9,477	66	160	10/16-5/31	37	500	0	112	0	0	54	0	59	12	0	47	0	47	--	0	--	--	0	37	0	37	79	0
Wildlife	320	0	0	--	4	0	0	0	0	0	3	0	0	--	0	4	0	4	--	0	--	--	0	4	0	4	100	0
Subtotal	39,343	2,691	320	--	949	1,228	37	393	756	48	493	0	595	48	25	402	0	427	--	0	--	--	25	904	0	929	227	20
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)																												
Bicknell Spring[g]	n/a[i]	n/a	n/a	5/16-6/30	1,029	1,029	n/a	1,019	0	n/a	n/a	n/a	878	85	n/a	n/a	n/a	n/a	5/16-6/30	1,029	100	117	n/a	n/a	n/a	n/a	n/a	n/a
Cedar Peak[g]	12,351	589	0	5/16-6/30 9/11-10/25	1,046	655	391	0	1,289	27	27	7	506	77	20	39	11	70	5/16-6/30 9/11-10/25	655	100	129	67	121	64	252	360	139
Hare Lake[g]	11,453	1,229	639	5/16-6/30 9/16-10/25	870	545	325	0	1,908	37	14	0	481	88	20	39	0	59	5/16-6/30 9/16-10/25	545	100	133	67	61	53	181	307	144
Smooth Knoll[g]	18,761	920	0	5/16-6/30 9/16-10/31	1,682	1,053	629	0	1,510	150	14	0	590	56	67	32	0	99	5/16-6/30 9/16-10/31	1,053	100	178	166	61	105	332	335	297
Cyclone Co-op[g]	n/a	n/a	n/a	5/1-5/31	622	622	n/a	618	0	n/a	n/a	n/a	524	84	n/a	n/a	n/a	n/a	5/1-5/31	622	100	119	n/a	n/a	n/a	n/a	n/a	n/a
Co-op[g]	7,160	120	0	5/16-6/30	508	229	279	0	929	80	14	6	182	79	65	24	9	98	5/16-6/30	229	100	126	92	51	9	152	155	127
Cyclone[g]	17,603	1,957	0	5/16-6/30 10/1-11/15	1,203	542	661	0	895	165	27	7	527	97	100	32	11	143	5/16-6/30 10/1-11/15	542	100	103	171	104	11	286	200	375
Hector Hollow	2,002	0	0	3/11-4/30 5/11-6/10 12/1-1/31	199	138	0	109	100	0	20	0	56	41	0	14	0	14	3/11-6/10 12/1-1/31	138	100	246	0	61	0	61	436	0
Subtotal	69,330	4,815	639	--	7,159	4,813	2,285	1,746	6,631	459	116	20	3,744	78	272	180	31	483	--	4,813	100	129	563	459	242	1,264	262	1,082

CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Spring, Fall, Winter)																												
Bicknell	1,819	0	0	11/1-3/31	149	150	0	19	484	0	13	0	75	50	0	11	0	11	11/1-3/31	106	71	141	0	43	0	43	391	0
Fishlake	2,880	1,200	0	6/1-6/25 10/21-11/10	236	162	0	0	1,800	8	15	40	162	100	7	14	53	74	6/1-6/25 10/21-11/10	117	72	72	15	51	53	119	161	0
Lime Kiln	2,960	0	320	11/1-2/28	332	354	0	7	0	0	20	0	229	65	0	14	0	14	11/1-2/28	274	77	120	0	58	0	58	414	0
Loa Winter[f]	n/a	n/a	n/a	10/16-3/31	118	254	n/a	96	0	n/a	n/a	0	133	52	n/a	n/a	n/a	n/a	10/16-3/31	30	12	23	n/a	n/a	n/a	n/a	n/a	0
Long Hollow	8,064	640	0	1/16-3/20	393	332	73	0	1,200	77	68	0	245	74	40	65	0	105	1/16-3/20	119	36	49	84	233	0	317	302	0
Terza Flat	7,278	1,312	0	2/1-3/15	334	321	69	0	1,150	124	20	0	234	73	65	41	0	106	2/1-3/15	71	22	30	75	233	0	308	291	0
Lyman	2,037	0	0	12/1-3/15	157	125	0	37	0	0	20	0	89	71	0	14	0	14	12/1-3/15	105	84	118	0	52	0	52	371	0
Neff Ranch	1,646	0	1,174	1/6-2/25	180	105	0	0	300	0	20	0	105	100	0	14	0	14	1/6-2/25	89	85	85	0	91	0	91	650	0
North Fremont	3,351	642	0	11/1-4/30	235	323	0	0	450	44	54	0	216	67	19	47	0	66	11/1-4/30	9	3	4	54	172	0	226	342	0
Post Hollow	11,715	1,911	0	10/15-3/31	631	499	132	20	1,345	140	48	0	293	59	90	42	0	132	10/15-3/31	308	62	105	163	160	0	323	245	0
Sand Wash	778	0	0	2/1-2/25	40	54	0	0	350	0	13	0	0	0	0	9	0	9	2/1-2/25	6	11	--	0	34	0	34	378	0
Seven Mile[e,g]	18,639	1,274	0	5/6-6/15	557	733	0	723	0	44	109	40	436	56	8	66	53	127	5/16-6/15	146	29	33	33	325	53	411	324	0
Subtotal	61,167	6,979	1,494	--	3,362	3,412	274	902	7,079	437	400	80	2,217	62	229	337	106	672	--	1,380	41	62	424	1,452	106	1,982	295	0
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Spring, Fall, Winter)																												
Bicknell Winter[g,h]	n/a	n/a	n/a	4/16-5/15 9/1-3/31	1,276[h]	1,276[h]	n/a	792[h]	0	n/a	n/a	n/a	729[h]	59	n/a	n/a	n/a	n/a	4/16-5/15 9/1-3/31	1,265	99	174	n/a	n/a	n/a	n/a	n/a	n/a
Flat Top[g]	19,256	2,790	0	5/16-6/30 11/1-1/31	1,265	739	526	0	1,150	124	61	0	418	57	53	79	0	132	5/16-6/30 11/1-1/31	739	100	177	146	202	0	348	264	0
King Sheep[g,h]	8,741	0	0	11/1-2/28	268[h]	154[h]	107[h]	0	136[h]	49	77[h]	0	50[h]	33	20	70[h]	0	90	11/1-2/28	147	95	294	50	260[h]	0	310[h]	344	0
Busenbark	356	0	0	12/1-12/31	30	30	0	0	150	0	7	0	20	67	0	6	0	6	12/1-12/31	9	30	45	0	21	0	21	350	0
Cedar Grove	11,755	1,280	0	5/11-6/30 10/1-1/15	1,320	1,134	0	308	1,980	27	8	120	418	37	18	10	158	186	5/11-6/30 10/1-1/15	1,080	96	260	47	35	158	240	129	0
Grover	1,582	0	0	11/1-5/31	178	120	58	17	0	0	28	0	17	14	0	24	0	24	11/1-5/31	92	77	541	0	86	0	86	358	0
Spring Branch	492	80	0	11/1-4/15	52	11	41	2	0	0	9	0	6	55	0	8	0	8	11/1-4/15	11	100	183	0	35	0	35	438	6
Teasdale Ranch	1,035	0	0	10/16-4/15	80	80	0	20	0	0	13	0	71	89	0	11	0	11	10/16-4/15	37	46	52	0	43	0	43	391	0
Subtotal	43,217	4,150	0	--	4,469	3,544	732	1,139	3,416	200	203	120	1,729	49	91	208	158	457	--	3,380	96	196	243	682	158	1,083	237	6
GRAND TOTAL	213,057	18,635	2,453	--	15,939	12,997	3,328	4,180	17,882	1,144[j]	1,212[j]	220[j]	8,285	64	617	1,127	295	2,039	--	9,573	74	116	1,255	3,497	506	5,258	258	1,108

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[a] Number may vary from year to year. Livestock grazing allocation (AUMs) remains constant.

[b] Based on the average authorized active (licensed) use for the 3 years 1975-77.

[c] Use converted from Utah Division of Wildlife Resources information. Due to lack of other information, these are considered competitive AUMs.

[d] The 1,108 AUMs would be allocated to watershed, recreation, aesthetics, threatened or endangered species.

[e] In this alternative, the five allotments proposed for combination in the proposed action are treated individually.

[f] The Deleeuw section of the Loa Winter Allotment would be removed from livestock grazing (Appendix VIII-1).

[g] Allotments currently being managed under allotment management plans (AMP).

[h] Riparian area fenced out reduced 37 AUMs production from the Bicknell Winter-King Sheep allotments. Riparian is 6 percent of the King Sheep Allotment (Appendix VIII-1).

[i] n/a = not applicable, as information for these allotments is included in the sub-allotments listed thereunder, or allotment listed above.

[j] Includes both summer and winter animals--antelope 394 summer, 750 winter; deer 109 summer, 1,103 winter; elk 20 summer, 200 winter.

APPENDIX VIII-3

Existing and Alternative Grazing Statisti for A 50 Percent Reduction From the Proposed Livestock Allocation

Basic Information					Existing Forage Use and Allocation														Alternative Forage Use and Allocation									
								Number and Kind of Animal					Current Use															
	Land Status					Current Allocation (AUMs)		Livestock[a]		Wildlife			Livestock[b]		Estimated Wildlife Use (AUMs)[c]					Livestock			Wildlife Use					
																					% of Current		AUMs					
Proposed Action Components and Allotments	Public	State	Private	Season of Use	Forage Production (AUMs)	Livestock	Wildlife	Cattle	Sheep	Antelope	Deer	Elk	AUMs	% of Allocation	Antelope	Deer	Elk	Total	Season	AUMs	Allocation	Use	Antelope	Deer	Elk	Total	Percent of Current Use	AUMs Allocated to Other Uses[g]
NO LIVESTOCK GRAZING																												
Dez Hickman	155	0	0	--	6	0	0[d]	0	0	0	6	0	0	--	0	5	0	5	--	0	--	--	0	6	0	6	120	0
Tanner[h]	400	0	0	--	20	0	0[d]	0	0	0	13	0	0	--	0	9	0	9	--	0	--	--	0	20	0	20	222	0
Wildlife	320	0	0	--	4	0	0[d]	0	0	0	3	0	0	--	0	4	0	4	--	0	--	--	0	4	0	4	100	0
Subtotal	875	0	0	--	30	0	0	0	0	0	22	0	0	--	0	18	0	18	--	0	--	--	0	30	0	30	167	0
CONTINUE EXISTING CONTINUOUS-SEASONAL GRAZING (Spring, Fall, Winter)																												
Bicknell	1,819	0	0	11/1-3/31	149	150	0	19	0	0	13	0	75	50	0	11	0	11	11/1-3/31	60	40	80	0	43	0	43	391	46
Bicknell Spring[e]	n/a[f]	n/a	n/a	5/16-6/30	1,029	1,029	n/a	1,019	0	n/a	n/a	n/a	878	85	n/a	n/a	n/a	n/a	5/16-6/30	514	50	58	n/a	n/a	n/a	n/a	n/a	515
Cedar Peak[e]	12,351	589	0	5/16-6/30 9/11-10/25	1,046	655	391	0	1,289	27	27	7	506	77	20	39	11	70	5/16-6/30 9/11-10/25	328	50	64	67	121	64	252	360	466
Hare Lake[e]	11,453	1,229	639	5/16-6/30 9/16-10/25	870	545	325	0	1,908	37	14	0	481	88	20	39	0	59	5/16-6/30 9/16-10/25	272	50	56	67	61	53	181	307	417
Smooth Knoll[e]	18,761	920	0	5/16-6/30 9/16-10/31	1,682	1,053	629	0	1,510	150	14	0	590	56	67	32	0	99	5/16-6/30 9/16-10/31	526	50	89	166	61	105	332	335	824
Bicknell Winter[e]	n/a	n/a	n/a	4/16-5/15 9/1-3/31	1,191[i]	1,306	n/a	843	0	n/a	n/a	n/a	776	59	n/a	n/a	n/a	n/a	4/16-5/15 9/1-3/31	653	50	84	n/a	n/a	n/a	n/a	n/a	538[i]
Flat Top[e]	19,256	2,790	0	5/16-6/30 11/1-1/31	1,265	739	526	0	1,150	124	61	0	418	57	53	79	0	132	5/16-6/30 11/1-1/31	370	50	52	146	202	0	348	264	547
King Sheep[e]	9,341	0	0	11/1-2/28	390	161	114	0	145	49	82	0	53	33	20	74	0	94	11/1-2/28	80	50	150	50	260	0	310	330	0
Brian[h]	640	0	0	12/1-3/31	33	33	0	27	50	0	13	0	13	0	0	9	0	9	12/1-3/31	8	24	62	0	25	0	25	278	0
Busenbark	356	0	0	12/1-12/31	30	30	0	0	150	0	7	0	20	67	0	6	0	6	12/1-12/31	12	40	60	0	18	0	18	300	0
Cedar Grove	11,755	1,280	0	5/11-6/30 10/1-1/15	1,320	1,134	0[d]	308	1,980	27	8	120	418	37	18	10	158	186	5/11-6/30 10/1-1/15	567	50	136	47	35	158	240	129	513
Cyclone Co-op[e]	n/a	n/a	n/a	5/1-5/31	622	622	n/a[f]	618	0	n/a	n/a	n/a	524	84	n/a	n/a	n/a	n/a	5/1-5/31	311	50	59	n/a	n/a	n/a	n/a	n/a	311
Co-op[e]	7,160	120	0	5/16-6/30	508	229	279	0	929	80	14	6	182	79	65	24	9	98	5/16-6/30	114	50	62	92	51	9	152	155	242
Cyclone[e]	17,603	1,957	0	5/16-6/30 10/1-11/15	1,203	542	661	0	895	165	27	7	527	97	100	32	11	143	5/16-6/30 10/1-11/15	271	50	51	171	104	11	286	200	646
Donkey Hill	1,367	0	0	10/16-3/15	25	25	0	10	0	0	20	0	25	100	0	17	0	17	10/16-3/15	8	32	32	0	17	0	17	100	0
Fishlake	2,880	1,200	0	6/1-6/25 10/21-11/10	236	162	0[d]	0	1,800	8	15	40	162	100	7	14	53	74	6/1-6/25 10/21-11/10	81	50	50	15	51	53	119	161	36
Government Creek	1,842	0	0	12/1-2/28	91	91	0	0	147	0	54	0	87	96	0	47	0	47	12/1-2/28	30	33	34	0	61	0	61	130	0
Grover	1,582	0	0	11/1-5/31	178	120	58	17	0	0	28	0	17	14	0	24	0	24	8/16-4/15	60	50	353	0	86	0	86	358	32

Hector Hollow	2,002	0	0	3/11-4/30 5/11-6/10 12/1-1/31	199	138	0	109	100	0	20	0	56	41	0	14	0	14	3/11-6/10 12/1-1/31	69	50	123	0	61	0	61	436	69
Hickman	272	0	0	6/1-7/31	12	4	0[d]	2	0	0	9	0	4	100	0	8	0	8	6/1-7/31	2	50	50	0	10	0	10	125	0
Horse Pasture	640	0	0	8/16-4/15	14	14	0	2	0	0	20	0	8	57	0	17	0	17	8/16-4/15	3	22	38	0	11	0	11	65	0
Lime Kiln	2,960	0	320	11/1-2/28	332	354	0	7	484	0	20	0	229	65	0	14	0	14	11/1-2/28	137	38	60	0	58	0	58	414	137
Loa Winter	n/a	n/a	n/a	10/16-3/31	71[k]	254	172	96	0	n/a	n/a	0	133	52	n/a	n/a	n/a	n/a	10/16-3/31	71	28	53	n/a	n/a	n/a	n/a	n/a	0[j]
Deleeuw	3,238	625	0	5/21-5/31 7/1-1/30	194	168	n/a	0	350	48	82	0	118	70	25	56	0	81	5/21-5/31 7/1-1/30	45	27	38	25	124	0	149	184	0
Long Hollow	8,064	640	0	1/16-3/20	423	332	n/a	0	1,200	77	68	0	245	74	40	65	0	105	1/16-3/20	98	30	40	84	233	0	317	302	8
Terza Flat	7,278	1,312	0	2/1-3/15	362	321	n/a	0	1,150	124	20	0	234	73	65	41	0	106	2/1-3/15	86	27	36	75	201	0	276	260	0
Lyman	2,037	0	0	12/1-3/15	157	125	0	37	0	0	20	0	89	71	0	14	0	14	12/1-3/15	62	50	69	0	52	0	52	371	43
Miner's Mountain[e]	15,683	2,000	0	10/16-5/31	320	211	0	160	0	0	137	0	144	68	0	118	0	118	10/16-5/31	80	38	55	0	240	0	240	203	0
Neff Ranch	1,646	0	1,174	1/6-2/25	180	105	0	0	300	0	20	0	105	100	0	14	0	14	1/6-2/25	44	42	42	0	91	0	91	650	45
North Fremont	3,351	642	0	11/1-4/30	235	323	0	0	450	44	54	0	216	67	19	47	0	66	11/1-4/30	67	21	31	54	114	0	168	255	0
Post Hollow	11,715	1,911	0	10/15-3/31	631	499	132	20	1,345	140	48	0	293	59	90	42	0	132	10/15-3/31	250	50	85	163	160	0	323	245	58
Rees[h]	1,080	0	0	3/1-4/30	32	32	0	16	0	0	20	0	0	0	0	14	0	14	3/1-4/30	8	25	--	0	24	0	24	300	0
River	2,029	0	160	10/16-4/15	75	75	0	13	0	0	28	0	60	80	0	24	0	24	10/16-4/15	28	37	46	0	47	0	47	196	0
Sand Wash	778	0	0	2/1-2/25	40	54	0	0	350	0	13	0	0	0	0	9	0	9	2/1-2/25	11	20	--	0	29	0	29	322	0
Seven Mile[h]	18,639	1,274	0	5/6-6/15	557	733	0	723	0	44	109	40	436	56	8	66	53	127	5/6-6/15	189	26	43	33	282	53	368	290	0
Spring Branch	492	80	0	11/1-4/15	52	11	41	2	0	0	9	0	6	55	0	8	0	8	11/1-4/15	8	73	133	0	35	0	35	438	9
Taylor Farm[h]	400	0	0	12/1-1/31	18	18	0	0	100	0	9	0	7	0	0	6	0	6	12/1-1/31	5	28	71	0	13	0	13	217	0
Teasdale Bench	1,200	0	0	1/1-1/31	20	20	0	0	100	0	20	0	20	100	0	17	0	17	1/1-1/31	6	30	30	0	14	0	14	82	0
Teasdale Ranch	1,035	0	0	10/16-4/15	80	80	0	20	0	0	13	0	71	89	0	11	0	11	10/16-4/15	35	44	49	0	43	0	43	391	2
Torrey Town	9,477	66	160	10/16-5/31	37	500	0	112	0	0	54	0	59	12	0	47	0	47	10/16-5/31	14	3	24	0	23	0	23	49	0
Subtotal	212,182	18,635	2,453	--	15,909	12,997	3,328	4,180	17,882	1,144	1,190	220	8,285	64	617	1,109	295	2,021	--	5,583	43	67	1,255	3,061	506	4,822	239	5,504
GRAND TOTAL	213,057	18,635	2,453	--	15,939	12,997	3,328	4,180	17,882	1,144[k]	1,212[k]	220[k]	8,285	64	617	1,127	295	2,039	--	5,583	43	67	1,255	3,091	506	4,852	238	5,504

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[a] Number may vary from year to year. Livestock grazing allocation (AUMs) remain constant.

[b] Based on the average authorized active (licensed) use for the 3 years 1975-77.

[c] Use converted from Utah Division of Wildlife Resources information. Due to lack of other information, these are considered competitive AUMs.

[d] Though no reservations were made, it is assumed, based on current forage condition and trend, that forage is available for the AUMs of wildlife use listed in estimated initial wildlife use column.

[e] Allotments currently being manageed under allotment management plans (AMP).

[f] n/a = not applicable, as information for these allotments is included in the sub-allotments listed there under, or allotment listed above.

[g] There are 5,504 AUMs that would be allocated to watershed, aesthetics, threatened or endangered species.

[h] The Brian, Rees, Tanner, and Taylor Farm allotments would not be combined with the Seven Mile Allotment in this alternative.

[i] One hundred and fifteen AUMs were transferred to the King Sheep totals to remove an apparent overallocation.

[j] A total of the AUMs were transferred to the sub-allotments: Deleeuw (13), Long Hollow (30) and Terza Flat (28) for use by wildlife.

[k] Includes both summer and winter animals--antelope 394 summer, 750 winter; deer 190 summer, 1,103 winter; elk 20 summer, 200 winter.

APPENDIX VIII-4

Existing Vegetation Use and Alternate Allocation With Elimination of Livestock Grazing

Basic Information					Existing Forage Use and Allocation														Alternative Allocation						
								Number and Kind of Animal					Current Use												
								Livestock[a]		Wildlife			Livestock[b]		Estimated Wildlife Use (AUMs)[c]					Wildlife Use					
	Land Status					Current Allocation (AUMs)														AUMs					
Alternate Action and Allotments	Public	State	Private	Season of Use	Forage Production (AUMs)	Livestock	Wildlife	Cattle	Sheep	Antelope	Deer	Elk	AUMs	% of Allocation	Antelope	Deer	Elk	Total	Livestock AUMs	Antelope	Deer	Elk	Total	Percent of Current Use	Other Uses AUMs[d]
NO LIVESTOCK GRAZING																									
Bicknell	1,819	0	0	11/1-3/31	149	150	0	19	484	0	13	0	75	50	0	11	0	11	0	0	43	0	43	391	106
Bicknell Spring	n/a[f]	n/a	n/a	5/16-6/30	1,029	1,029	n/a	1,019	0	n/a	n/a	n/a	878	85	n/a	n/a	n/a	n/a	0	n/a	n/a	n/a	n/a	n/a	n/a
Cedar Peak	12,351	589	0	5/16-6/30 9/11-10/25	1,046	655	391	0	1,289	27	27	7	506	77	20	39	11	70	0	67	121	64	252	360	1,092
Hare Lake	11,453	1,229	639	5/16-6/30 9/16-10/25	870	545	325	0	1,908	37	14	0	481	88	20	39	0	59	0	67	61	53	181	307	967
Smooth Knoll	18,761	920	0	5/16-6/30 9/16-10/31	1,682	1,053	629	0	1,510	150	14	0	590	56	67	32	0	99	0	166	61	105	332	335	1,803
Bicknell Winter	n/a	n/a	n/a	4/16-5/15 9/1-3/31	1,306	1,306	n/a	843	0	n/a	n/a	n/a	776	59	n/a	n/a	n/a	n/a	0	n/a	n/a	n/a	n/a	n/a	n/a
Flat Top	19,256	2,790	0	5/16-6/30 11/1-1/31	1,265	739	526	0	1,150	124	61	0	418	57	53	79	0	132	0	146	202	0	348	264	1,792
King Sheep	9,341	0	0	11/1-2/28	275	161	114	0	145	49	82	0	53	33	20	74	0	94	0	50	277	0	327	348	379
Brian[e]	640	0	0	12/1-3/31	33	33	0	27	50	0	13	0	13	39	0	9	0	9	0	0	33	0	33	366	0
Busenbark	356	0	0	12/1-12/31	30	30	0	0	150	0	7	0	20	67	0	6	0	6	0	0	21	0	21	350	9
Cedar Grove	11,755	1,280	0	5/11-6/30 10/1-1/15	1,320	1,134	0	308	1,980	27	8	120	418	37	18	10	158	186	0	47	35	158	240	129	1,080
Cyclone Co-op	n/a	n/a	n/a	5/1-5/31	622	622	n/a	618	0	n/a	n/a	n/a	524	84	n/a	n/a	n/a	n/a	0	n/a	n/a	n/a	n/a	n/a	n/a
Co-op	7,160	120	0	5/16-6/30	508	229	279	0	929	80	14	6	182	79	65	24	9	98	0	92	51	9	152	155	531
Cyclone	17,603	1,957	0	5/16-6/30 10/1-11/15	1,203	542	661	0	895	165	27	7	527	97	100	32	11	143	0	171	104	11	286	200	1,364
Dez Hickman	155	0	0	--	6	0	0	0	0	0	6	0	0	--	0	5	0	5	0	0	6	0	6	120	0
Donkey Hill	1,367	0	0	10/16-3/15	25	25	0	10	0	0	20	0	25	100	0	17	0	17	0	0	25	0	25	147	0
Fishlake	2,880	1,200	0	6/1-6/25 10/21-11/10	236	162	0	0	1,800	8	15	40	162	100	7	14	53	74	0	15	51	53	119	161	117
Government Creek	1,842	0	0	12/1-2/28	91	91	0	0	147	0	54	0	87	96	0	47	0	47	0	0	91	0	91	194	0
Grover	1,582	0	0	11/1-5/31	178	120	58	17	0	0	28	0	17	14	0	24	0	24	0	0	86	0	86	358	92

APPENDIX VIII-4 (concluded)

Hector Hollow	2,002	0	0	3/11-4/30 5/11-6/10 12/1-1/31	199	138	0	109	100	0	20	0	56	41	0	14	0	14	0	0	61	0	61	371	138
Hickman	272	0	0	6/1-7/31	12	4	0	2	0	0	9	0	4	100	0	8	0	8	0	0	12	0	12	150	0
Horse Pasture	640	0	0	8/16-4/15	14	14	0	2	0	0	20	0	8	57	0	17	0	17	0	0	14	0	14	82	0
Lime Kiln	2,960	0	320	11/1-2/28	332	354	0	7	0	0	20	0	229	65	0	14	0	14	0	0	58	0	58	414	274
Loa Winter	n/a	n/a	n/a	10/16-3/31	118	254	n/a	96	0	n/a	n/a	0	133	52	n/a	n/a	n/a	n/a	0	n/a	n/a	n/a	n/a	n/a	n/a
Deleeuw	3,238	625	0	5/21-5/31 7/1-1/30	205	168	30	0	350	48	82	0	118	70	25	56	0	81	0	25	180	0	205	253	0
Long Hollow	8,064	640	0	1/16-3/20	393	332	73	0	1,200	77	68	0	245	74	40	65	0	105	0	84	233	0	317	302	135
Terza Flat	7,278	1,312	0	2/1-3/15	334	321	69	0	1,150	124	20	0	234	73	65	41	0	106	0	75	233	0	308	291	85
Lyman	2,037	0	0	12/1-3/15	157	125	0	37	0	0	20	0	89	71	0	14	0	14	0	0	52	0	52	371	105
Miner's Mountain	15,683	2,000	0	10/16-5/31	320	211	0	160	0	0	137	0	144	68	0	118	0	118	0	0	320	0	320	271	0
Neff Ranch	1,646	0	1,174	1/6-2/25	180	105	0	0	300	0	20	0	105	100	0	14	0	14	0	0	91	0	91	650	89
North Fremont	3,351	642	0	11/1-4/30	235	323	0	0	450	44	54	0	216	67	19	47	0	66	0	54	172	0	226	342	9
Post Hollow	11,715	1,911	0	10/15-3/31	631	499	132	20	1,345	140	48	0	293	59	90	42	0	132	0	163	160	0	323	245	308
Rees[e]	1,080	0	0	3/1-4/30	32	32	0	16	0	0	20	0	0	0	0	14	0	14	0	0	32	0	32	228	0
River	2,029	0	160	10/16-4/15	75	75	0	13	0	0	28	0	60	80	0	24	0	24	0	0	75	0	75	313	0
Sand Wash	778	0	0	2/1-2/25	40	54	0	0	350	0	13	0	0	0	0	9	0	9	0	0	34	0	34	378	6
Seven Mile[e]	18,639	1,274	0	5/6-6/15	557	733	0	723	0	44	109	40	436	56	8	66	53	127	0	33	325	53	411	324	146
Spring Branch	492	80	0	11/1-4/15	52	11	41	2	0	0	9	0	6	55	0	8	0	8	0	0	35	0	35	438	17
Tanner[e]	400	0	0	--	20	0	0	0	0	0	13	0	0	--	0	9	0	9	0	0	20	0	20	222	0
Taylor Farm[e]	400	0	0	12/1-1/31	18	18	0	0	100	0	9	0	7	30	0	6	0	6	0	0	18	0	18	300	0
Teasdale Bench	1,200	0	0	1/1-1/31	20	20	0	0	100	0	20	0	20	100	0	17	0	17	0	0	20	0	20	118	0
Teasdale Ranch	1,035	0	0	10/16-4/15	80	80	0	20	0	0	13	0	71	89	0	11	0	11	0	0	43	0	43	391	37
Torrey Town	9,477	66	160	10/16-5/31	37	500	0	112	0	0	54	0	59	12	0	47	0	47	0	0	37	0	37	79	0
Wildlife	320	0	0	--	4	0	0	0	0	0	3	0	0	--	0	4	0	4	0	0	4	0	4	100	0
GRAND TOTAL	213,057	18,635	2,453	--	15,939	12,997	3,328	4,180	17,882	1,144[g]	1,212[g]	220[g]	8,285	64	617	1,127	295	2,039	0	1,255	3,497	506	5,258	256	10,681

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[a] Number may vary from year to year. Livestock grazing allocation (AUMs) remains constant.

[b] Based on the average authorized active (licensed) use for the 3 years 1975-77.

[c] Use converted from Utah Division of Wildlife Resources information. Due to lack of other information, these are considered competitive AUMs.

[d] The 10,681 AUMs would be allocated to watershed, recreation, aesthetics, threatened or endangered species.

[e] In this alternative, the five allotments proposed for combination in the proposed action are treated individually.

[f] n/a = not applicable, as information for these allotments is included in the sub-allotments listed there under, or allotment listed above.

[g] Includes both summer and winter animals--antelope 394 summer, 750 winter; deer 109 summer, 1,103 winter; elk 20 summer, 200 winter.

Hector Hollow	2,002	0	0	3/11-4/30 5/11-6/10 12/1-1/31	199	138	0	109	100	0	20	0	56	41	0	14	0	14	0	0	61	0	61	371	138
Hickman	272	0	0	6/1-7/31	12	4	0	2	0	0	9	0	4	100	0	8	0	8	0	0	12	0	12	150	0
Horse Pasture	640	0	0	8/16-4/15	14	14	0	2	0	0	20	0	8	57	0	17	0	17	0	0	14	0	14	82	0
Lime Kiln	2,960	0	320	11/1-2/28	332	354	0	7	0	0	20	0	229	65	0	14	0	14	0	0	58	0	58	414	274
Loa Winter	n/a	n/a	n/a	10/16-3/31	118	254	n/a	96	0	n/a	n/a	0	133	52	n/a	n/a	n/a	n/a	0	n/a	n/a	n/a	n/a	n/a	n/a
Deleeuw	3,238	625	0	5/21-5/31 7/1-1/30	205	168	30	0	350	48	82	0	118	70	25	56	0	81	0	25	180	0	205	253	0
Long Hollow	8,064	640	0	1/16-3/20	393	332	73	0	1,200	77	68	0	245	74	40	65	0	105	0	84	233	0	317	302	135
Terza Flat	7,278	1,312	0	2/1-3/15	334	321	69	0	1,150	124	20	0	234	73	65	41	0	106	0	75	233	0	308	291	85
Lyman	2,037	0	0	12/1-3/15	157	125	0	37	0	0	20	0	89	71	0	14	0	14	0	0	52	0	52	371	105
Miner's Mountain	15,683	2,000	0	10/16-5/31	320	211	0	160	0	0	137	0	144	68	0	118	0	118	0	0	320	0	320	271	0
Neff Ranch	1,646	0	1,174	1/6-2/25	180	105	0	0	300	0	20	0	105	100	0	14	0	14	0	0	91	0	91	650	89
North Fremont	3,351	642	0	11/1-4/30	235	323	0	0	450	44	54	0	216	67	19	47	0	66	0	54	172	0	226	342	9
Post Hollow	11,715	1,911	0	10/15-3/31	631	499	132	20	1,345	140	48	0	293	59	90	42	0	132	0	163	160	0	323	245	308
Rees[e]	1,080	0	0	3/1-4/30	32	32	0	16	0	0	20	0	0	0	0	14	0	14	0	0	32	0	32	228	0
River	2,029	0	160	10/16-4/15	75	75	0	13	0	0	28	0	60	80	0	24	0	24	0	0	75	0	75	313	0
Sand Wash	778	0	0	2/1-2/25	40	54	0	0	350	0	13	0	0	0	0	9	0	9	0	0	34	0	34	378	6
Seven Mile[e]	18,639	1,274	0	5/6-6/15	557	733	0	723	0	44	109	40	436	56	8	66	53	127	0	33	325	53	411	324	146
Spring Branch	492	80	0	11/1-4/15	52	11	41	2	0	0	9	0	6	55	0	8	0	8	0	0	35	0	35	438	17
Tanner[e]	400	0	0	--	20	0	0	0	0	0	13	0	0	--	0	9	0	9	0	0	20	0	20	222	0
Taylor Farm[e]	400	0	0	12/1-1/31	18	18	0	0	100	0	9	0	7	30	0	6	0	6	0	0	18	0	18	300	0
Teasdale Bench	1,200	0	0	1/1-1/31	20	20	0	0	100	0	20	0	20	100	0	17	0	17	0	0	20	0	20	118	0
Teasdale Ranch	1,035	0	0	10/16-4/15	80	80	0	20	0	0	13	0	71	89	0	11	0	11	0	0	43	0	43	391	37
Torrey Town	9,477	66	160	10/16-5/31	37	500	0	112	0	0	54	0	59	12	0	47	0	47	0	0	37	0	37	79	0
Wildlife	320	0	0	--	4	0	0	0	0	0	3	0	0	--	0	4	0	4	0	0	4	0	4	100	0
GRAND TOTAL	213,057	18,635	2,453	--	15,939	12,997	3,328	4,180	17,882	1,144[g]	1,212[g]	220[g]	8,285	64	617	1,127	295	2,039	0	1,255	3,497	506	5,258	256	10,681

[a] Number may vary from year to year. Livestock grazing allocation (AUMs) remains constant.

[b] Based on the average authorized active (licensed) use for the 3 years 1975-77.

[c] Use converted from Utah Division of Wildlife Resources information. Due to lack of other information, these are considered competitive AUMs.

[d] The 10,681 AUMs would be allocated to watershed, recreation, aesthetics, threatened or endangered species.

[e] In this alternative, the five allotments proposed for combination in the proposed action are treated individually.

[f] n/a = not applicable, as information for these allotments is included in the sub-allotments listed there under, or allotment listed above.

[g] Includes both summer and winter animals--antelope 394 summer, 750 winter; deer 109 summer, 1,103 winter; elk 20 summer, 200 winter.

CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF GRAZING ALLOCATION (Winter)																									
Bicknell	1,819	0	0	11/1-3/31	149	150	0	19	0	0	13	0	75	50	0	11	0	11/1-3/31	120	80	0	29	0	264	0
Lime Kiln	2,960	0	320	11/1-2/28	332	354	0	7	484	0	20	0	229	65	0	14	0	11/1-2/28	274	77	0	58	0	414	0
Loa Winter	n/a	n/a	n/a	10/16-3/31	142	254	172	96	0	n/a	n/a	0	133	52	n/a	n/a	n/a	10/16-3/31	142	56	n/a	n/a	n/a	n/a	0
Deleeuw	3,238	625	0	5/21-5/31 7/1-1/30	181	168	n/a	0	350	48	82	0	118	70	25	56	0	10/16-3/31	90	54	25	66	0	112	0
Long Hollow	8,064	640	0	1/16-3/20	393	332	n/a	0	1,200	77	68	0	245	74	40	65	0	1/16-3/20	195	59	40	158	0	189	0
Terza Flat	7,278	1,312	0	2/1-3/15	334	321	n/a	0	1,150	124	20	0	234	73	65	41	0	2/1-3/15	172	54	65	97	0	153	0
Miner's Mountain[i]	15,683	2,000	0	10/16-5/31	320	211	0	160	0	0	137	0	144	68	0	118	0	11/1-11/30 5/1-5/31	161	76	0	159	0	135	0
Neff Ranch	1,646	0	1,174	1/6-2/25	180	105	0	0	300	0	20	0	105	100	0	14	0	1/6-2/25	89	85	0	91	0	650	0
North Fremont	3,351	642	0	11/1-4/30	235	323	0	0	450	44	54	0	216	67	19	47	0	11/1-4/30	134	41	19	82	0	153	0
Sand Wash	778	0	0	2/1-2/25	40	54	0	0	350	0	13	0	0	0	0	9	0	2/1-2/25	22	41	0	18	0	200	0
Torrey Town[i]	9,477	66	160	10/16-5/31	37	500	0	112	0	0	54	0	59	12	0	47	0	10/16-5/31	27	5	0	10	0	21	0
Subtotal	54,294	5,285	1,654	--	2,343	2,772	172	394	4,284	293	481	0	1,558	56	149	422	0	--	1,426	51	149	768	0	161	0
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING ADJUSTED BY UTILIZATION (Winter)																									
Busenbark	356	0	0	12/1-12/31	30	30	0	0	150	0	7	0	20	67	0	6	0	12/1-12/31	25	83	0	5	0	71	0
Donkey Hill	1,367	0	0	10/16-3/15	25	25	0	10	0	0	20	0	25	100	0	17	0	10/16-3/15	15	60	0	10	0	59	0
Government Creek	1,842	0	0	12/1-2/28	91	91	0	0	147	0	54	0	87	96	0	47	0	12/1-2/28	60	66	0	31	0	66	0
Grover	1,582	0	0	11/1-5/31	178	120	58	17	0	0	28	0	17	14	0	24	0	11/1-5/31	120	100	0	58	0	242	0
Horse Pasture	640	0	0	8/16-4/15	14	14	0	2	0	0	20	0	8	57	0	17	0	8/16-4/15	6	45	0	8	0	100	0
River	2,029	0	160	10/16-4/15	75	75	0	13	0	0	28	0	60	80	0	24	0	10/16-4/15	57	76	0	18	0	75	0
Spring Branch	492	80	0	11/1-4/15	52	11	41	2	0	0	9	0	6	55	0	8	0	11/1-4/15	17[j]	156	0	35	0	389	0
Teasdale Bench	1,200	0	0	1/1-1/31	20	20	0	0	100	0	20	0	20	100	0	17	0	1/1-1/31	11	55	0	9	0	53	0
Teasdale Ranch	1,035	0	0	10/16-4/15	80	80	0	20	0	0	13	0	71	89	0	11	0	10/16-4/15	70	88	0	10	0	91	0
Subtotal	10,543	80	160	--	565	466	99	64	397	0	199	0	314	67	0	171	0	--	381	82	0	184	0	109	0
CONTINUE WITH CONTINUOUS-SEASONAL GRAZING WITH ADJUSTMENT OF SEASON (Winter)																									
Hickman	272	0	0	6/1-7/31	12	4	0[d]	2	0	0	9	0	4	100	0	8	0	11/1-3/31	4	100	0	8	0	100	0
Subtotal	272	0	0	--	12	4	0[d]	2	0	0	9	0	4	100	0	8	0	--	4	100	0	8	0	100	0
GRAND TOTAL	213,057	18,635	2,453	--	15,939	12,997	3,328	4,180	17,882	1,144[k]	1,212[k]	220[k]	8,285	64	617	1,127	295		6,480	50	617	1,927	406	139	6,509

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[a] Number may vary from year to year. Livestock grazing allocation (AUMs) remains constant.

[b] Based on the average authorized active (licensed) use for the 3 years 1975-77.

[c] Use converted from Utah Division of Wildlife Resources information. Due to lack of other information, these are considered competitive AUMs.

[d] There are 6,509 AUMs of reservation that would be allocated to watershed, aesthetics, threatened or endangered species (see Appendix I-6).

[e] Though no reservations were made, it is assumed, based on current forage condition and trend, that forage is available for the AUMs of wildlife use listed in estimated initial wildlife use column.

[f] Allotments currently being managed under allotment management plans (AMP).

[g] n/a = not applicable, as information for these allotments is included in the sub-allotments listed there under, or allotment listed above.

[h] The Brian, Rees, Tanner, and Taylor Farm allotments would be combined with the Seven Mile Allotment and livestock grazing currently allowed in these allotments would be licensed in the Seven Mile Allotment.

[i] Use extends well into the spring period.

[j] Adjusted to allow at least 1/3 of all forage for livestock.

[k] Includes both summer and winter animals--antelope 394 summer, 750 winter; deer 109 summer, 1,103 winter; elk 20 summer, 200 winter.

GLOSSARY

Acre-Foot. A volume that will cover an area of 1 acre to a depth of 1 foot (43,560 cubic feet).

Adjudication. A process through which the BLM adjusted the livestock preference permits granted to livestock operators. The adjudication was based on BLM studies and the class, numbers, and seasons of use of livestock. Allotment boundary were established by agreement with operators or administrative decisions.

Allocation.. The officially recognized amount of forage (generally described as AUMs) which is given to a particular individual livestock operator or organization.

Allotment. An area of land where one or more operators graze their livestock. Generally consists of public land but may include parcels of private or state lands. The number of livestock and season of use are stipulated for each allotment. An allotment may consist of several pastures or be only one pasture.

Allotment Management Plan (AMP). A written program of livestock grazing management, including supportive measures, if required, designed to attain specific management goals in a grazing allotment.

Alluvial. Relating to or formed by water carrying and depositing rocks, soil, and other materials.

Animal Units. One cow with calf less than 6 months old, or an equivalent identified as five sheep, 9.6 antelope, 5.8 mule deer, 1.88 elk.

Animal Unit Month (AUM). The amount of forage required to sustain the equivalent animal unit for one month.

Authorized Use. Livestock grazing use which is authorized by permit and for which livestock operators permittees have paid.

Browse. As a noun, trees and shrubs used as food by cattle, deer, elk, and other animals. As a verb, to consume, feed, or eat browse plants.

Carrying Capacity. The maximum stocking rate possible without inducing damage to vegetation or related resources such as watershed. This incorporates such things as the suitability of the range to grazing as well as the proper use which can be made on each and all the plants within the area. Normally expressed in terms of acres per animal unit month (AC/AUM) or sometimes referred to as the total AUMs that are available in any given area such as an allotment. Areas that are unsuitable for livestock use are not computed in the carrying capacity. This may or may not be the same as the stocking rate.

Climax Community. The final vegetation community which emerges after a series of successive vegetation stages and perpetuates itself indefinitely unless disturbed by outside forces.

Chaining. The process of manipulating vegetation by pulling an anchor chain between two crawler tractors. Tall growing brittle vegetation is reduced and grasses and forbsare enhanced.

Coliform. A general term for a group of bacteria found in the large intestine of man or animals--its presence in water usually indicates fecal pollution.

Community. An aggregate of organisms which form a distinct ecological unit. Such a unit may be defined in terms of plants, animals, or both.

Community Allotment. Allotments involving more than one livestock operator.

Competitive Forage. Forage used by both livestock and wildlife.

Continuous-Seasonal Grazing. A system of management which grazing is allowed on a unit less than a full year and there is no rotation among pastures during succeeding years.

Cool-Season Plant. A plant which generally makes the major portion of its growth during the late winter, spring, and early summer.

Critical Period. A period in plant development considered essential to the survival of an individual plant.

Crucial Wildlife Habitat. That portion of the living area of a wildlife species that is essential to the survival and perpetuation of the species either as individuals or as a population.

Current Use. Livestock use which is known to have occurred either because of counts made by BLM employees or because of reports from the livestock operators. This is based on the average authorized active (licensed) use for the 3 years 1975-77.

Current Year's Growth. The amount of vegetation growth that occurs in the period of one year.

Desirable Plants. Those plants which are palatable and productive forage species. They are normally long-lived plants which can include grasses, forbs, and browse.

Ecosystem. A self-sustaining natural system which includes living and non-living components of the environment and the interactions that bind them together. Its functioning involves the circulation of matter and energy between organisms and their environment.

Edaphic. A relationship influenced by soil rather than climate.

Endemic. A species restricted to a given geographical location. Species which are native to a given locale.

Evapotranspiration. The total water loss from the soil, including that by direct evaporation and that by transpiration from the surfaces of plants.

Exchange of Use. An agreement made with an operator having ownership of control of private land interspersed and grazed in conjunction with surrounding federal range. This agreement specifies the carrying capacity and gives the Bureau control of the nonfederal land for grazing purposes (see also percent federal range).

Fair Condition. A range is in fair condition if the plant composition is 15 to 39 percent of desirable and intermediate species with 5 or more percent made up of desirable species. Soil surface factor (SSF) is less than 60. Also, those ecosystems where the composition comprises 60 percent or more of intermediate species and less than 5 percent desirable species are present will be rated "fair" when SSF is less than 60.1. The actual percent compositions by species is determined by paced transect and ocular reconnaissance precedures. Soil surface factor is determined by an onsite investigation and evaluation.

Food Chain. The path of food energy transfer from producers to consumers.

Forage. Vegetation of all forms available and of a type used for animal consumption.

Forage Condition and Trend. The growth form and amount of forage used by ungulates (principally livestock) and the apparent direction (increasing or decreasing) such forage is moving.

Forb. A broadleaved herb other than grass.

Good Range Condition. A range is in good condition if plant composition is 40 percent or more of both desirable and intermediate species with at least 20 percent of the composition made up of desirable species and has a SSF less than 40. Species composition is determined using paced transects and ocular reconnaissance procedures and the SSF is determined directly through field investigation and evaluation.

Grazing Capacity. See carrying capacity.

Grazing Cycle. The number of years required to apply all of the treatments in the grazing formula to each pasture of the allotment. It is the completion of 1 full cycle of yearly schedules back to the point of beginning.

Grazing Treatments. The grazing of animals in a prescribed manner or system.

Habitat. A specific set of physical conditions that surround the single species, a group of species, or a large community. In wildlife management, the major components of habitat are considered to be food, water, cover, and living space.

Hedging. The persistent browsing of terminal buds of browse species causing excessive lateral branching and a reduction in upward growth.

Herb. A seed-producing plant that does not develop persistent woody tissue.

Herbage. The fleshy, edible parts of plants.

Infiltration. The flow of a liquid into a substance through pores or other openings.

Infiltration Rate. Characteristic describing the maximum rate at which water can enter the soil under specific conditions including the presence or excess water.

Key Species. A plant that is a relatively or potentially abundant species. It should be able to endure moderately close grazing, and serve as an indicator of changes occurring in the vegetational complex. The key species is an important vegetation component that if overused, will have a significant effect on watershed conditions, grazing capacity, or other resource values. More than one key species may be seleted on an allotment. For example, a species may be important for watershed protection, and a different species may be important for livestock forage or wildlife forage, etc.

License. See permit.

Litter. A surface layer of organic debris consisting of freshly fallen or slighly decomposed organic material. Litter is important because it covers and protects the soil, reduces runoff rates, increases infiltration, and it yields organic matter which improves soil fertility.

Livestock Operators. A person or organization legally permitted to graze livestock on public land.

Management Framework Plan (MFP). Land use plan for public lands administered by BLM which provides a set of goals, objectives, and constraints for a specific planning area; a guide to the development of detailed plans for the management of each resource.

Multiple-use Recommendations. Those recommendations contained in the MFP which attempt to resolve conflicts among single uses.

Non-point Source Pollution. Pollution from a diffuse source of gross area.

Ocular Reconnaissance Survey. A forage survey method which inventories vegetation by estimating total forage density, percent composition by species and total usable forage in a given range type to determine the carrying capacity for livestock and wildlife.

Pasture. A subdivision of a grazing allotment.

Pellet Groups. A group of fecal material defecated by an animal (particularly big game) at one time.

Percent Utilization. Grazing use of current growth, usually expressed as a percent of weight removed and most often related to key species.

Perennial Plant. A plant that has a life cycle of 3 or more years. Because of their longevity, it is desirable to base management on these species.

GLOSSARY (continued)

Permeability, Soil. The ease with which gasses, liquids, or plant roots penetrate or pass through a layer of soil.

Permit. An authorization which allows grazing on public lands. Permits specify class of livestock on a designated area during specified seasons each year. Permits are of two types preference (10 year) and temporary non-renewable (1 year).

Planning Area Analysis (PAA). The summary of data on social and economic conditions for a planning unit.

Phenology. Plant phenology refers to dates of sprouting, flowering, seeding production, and regrowth, as well as other observable occurrences in plant development.

Phreatophyte. Plants using large amounts of water; habitually sending roots down and absorbing water from the water table or other permanent ground water supply.

Physiological requirements. Nutritional requirements a plant needs for growth.

Plant Vigor. The relative well being and health of a plant as reflected by its ability to manufacture sufficient food for growth and maintenance.

Point Source Pollution. Pollution from a single identifiable source or location.

Profile (Soil). The series of superimposed layers of horizons in the soil.

Proper Use. A degree and time of grazing use which, if continued, will either maintain or improve the range condition consistent with conservation or other natural resources.

Plant Composition. The mixture of plants found in a vegetation type or study area usually expressed in percents as related to all the other plants.

Raptors. An order of birds of prey such as the eagle, hawk, owl, or vulture.

Rest. Refers to seasonal resting from livestock grazing of a range.

Rest-Seasonal Grazing. A system of management whereby grazing is allowed on a unit less than a full year with a scheduled systematic rotation among pastures during succeeding years.

Riparian Vegetation (habitat). Plants that are adapted to moist growing conditions found along waterways, ponds and generally moist environments.

Season-of-Use. Refers to the period of livestock grazing on an allotment.

Shrub. A plant that has persistent, woody stem and a relatively low growth habit, and generally produces several basal shoots instead of a single trunk.

GLOSSARY (concluded)

Soil Assocation. A group of defined and named soil units occurring together in individual and characteristic patterns over a geographic region.

Soil Classification. The systematic arrangements of soils into classes in one or more categories or levels of classification for a specific objective. Broad groupings are made on the basis of general characteristics and subdivisions on the basis of more detailed differences in specific properties.

Soil Surface Factor (SSF). A numerical expression of surface erosion activity caused by wind and water as reflected by soil movement, surface litter, erosion pavement, pedestalling, rills, flow patterns, and gullies. Values may vary from 0 for no erosion to 100 for severe erosion conditions.

State Lands. Land controlled or administered by one of the individual United States. In this statement, land controlled by the State of Utah.

Stocking Rate. The degree to which a grazing unit is stocked with livestock, usually expressed in AUMs. The stocking rate may be more or less than the carrying capacity.

Succulent. Having fleshy or juicy tissues with high water content.

Suspended Solids. A dispersion of solid particles in a liquid.

Sustained Yield. The achievement and maintenance of a high level, annual or regular period output of the various renewable resources of land without impairment of the productivity of the land and its environmental values.

Trespass. The grazing of livestock on public land without proper authority.

Unallotted Lands. Those lands not allocated to a specific use.

Unit Resource Analysis (URA). A compilation of physical resource data and an analysis of the current use, production, conditon, and trend of the resource and the potentials and opportunities within a planning unit, including a profile of ecological values.

Utilization. The proportion of the current year's forage production that is consumed or destroyed by grazing animals. This may refer either to a single species or to the whole vegetation complex. Utilization is expressed as a percent by weight, height, or numbers within reach of the grazing animal.

Vegetation Type. A plant community with distinquishable characteristics. A more or less distinct vegetation unit which may be delineated on the basis of aspect, composition, or density.

Warm Season Plant. A plant which makes most of all of its growth during the summer or fall and is usually dormant in winter.

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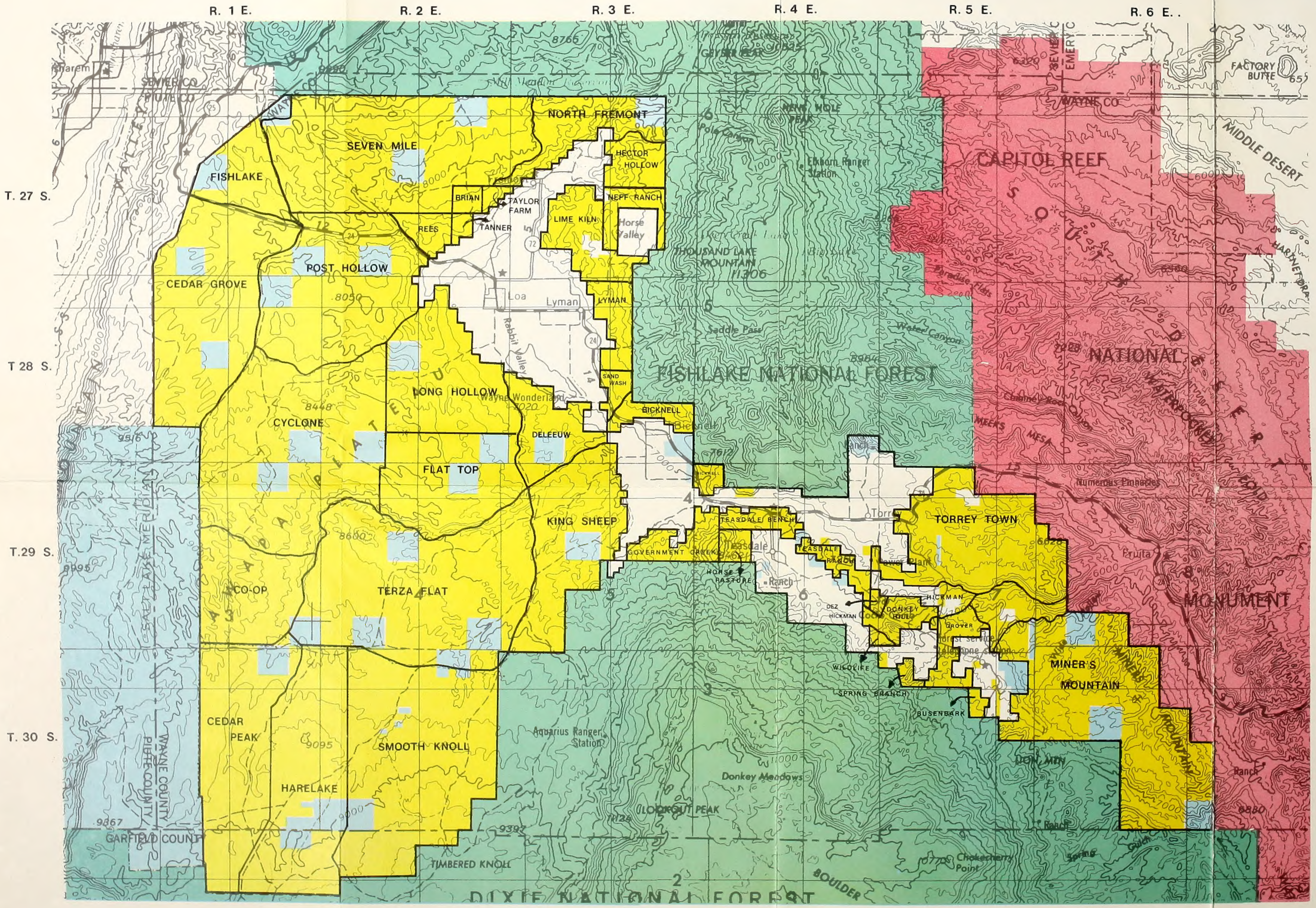

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